CONSTRUCTION
METHODS AND EQUIPMENT

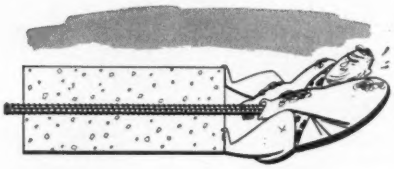
April 1951

Advantages offered by Inland HI•BOND since 1943 now officially recognized by American Concrete Institute

At the annual convention of the American Concrete Institute in 1949, Committee 208 on Bond Stress proposed changes in design stresses for concrete reinforcing bars. These proposals were made after Bureau of Standards tests proved that certain "improved" reinforcing bars could live up to higher standards.

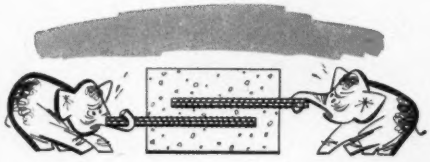
At the 1950 convention, the ACI Building Codes Committee adopted the proposals of Committee 208. And in February 1951, the Institute officially accepted the new building code change.

It is interesting to note that Inland HI-BOND has, for eight years, offered all advantages of higher bonding properties now officially recognized by ACI.



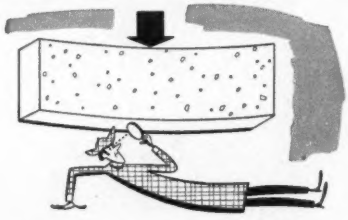
1 Increased bond stresses and greater resistance to slip

See reports on National Bureau of Standards research by Arthur Clark . . . ACI Proceedings, Vol. 43, p. 381; Vol. 44, p. 437; Vol. 46, p. 161; by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289.



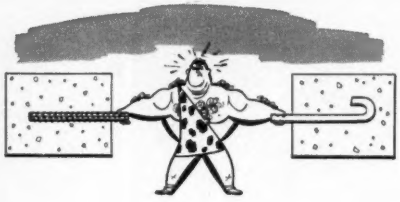
2 Increased efficiency at splices

See reports on National Bureau of Standards research by Ralph W. Kulge and E. C. Tuma . . . ACI Proceedings, Vol. 42, p. 13.



3 Reduced width of tensile cracks

See reports on National Bureau of Standards research by David Watstein and Norman Seese, Jr. . . . ACI Proceedings, Vol. 41, p. 293.



4 Hook anchorages unnecessary in most applications

See reports on National Bureau of Standards research by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289; by F. E. Richart . . . ACI Proceedings, Vol. 45, pp. 97 and 237.

See new ACI Building Code

INLAND **HI-BOND®**

The reinforcing bar with the built-in anchorage

INLAND STEEL COMPANY 38 S. Dearborn St., Chicago 3, Illinois

B.F.Goodrich

Working on the levee with 33-ton loads —this job calls for Super Traction!

WORKING on a levee enlargement job, the bottom-dump Euclid shown above is being loaded with over fifteen cubic yards of fill dirt from a borrow pit. Add an equipment weight of 35,700 pounds and this king-sized load represents a real traction job. When you consider that the thirty-three tons must be worked over soft, sandy loam—you have a job for super traction!

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- ★ **Rugged Oliver power that puts more "push" behind the blade.**
- ★ **Oliver exclusive steering principle that always lets you travel a straight line, regardless of the side-pull of off-center loads. No "jackknifing."**
- ★ **Cable power control unit that assures constant operating speed for quick, accurate control of moldboard action. Available in front or rear mounted units.**
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CONSTRUCTION METHODS AND EQUIPMENT

Volume 33, Number 4 **APRIL 1951** Established 1919

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Selective Concreting!

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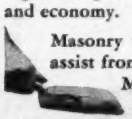

Masonry work was equally efficient—with an assist from extra-fat, easy-spreading Lone Star Masonry Mortar that stays plastic until units are firmly bedded, provides ample strength, assures the utmost in long-time, low-cost service.

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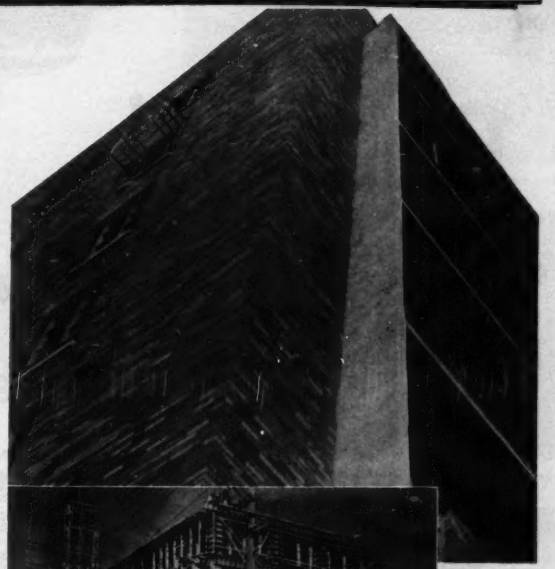

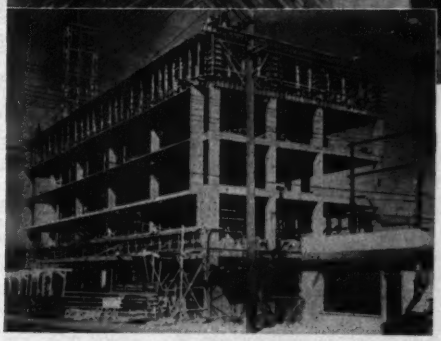

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'INCOR' HIGH EARLY STRENGTH PORTLAND CEMENT
LONE STAR AIR-ENTRAINING PORTLAND CEMENT
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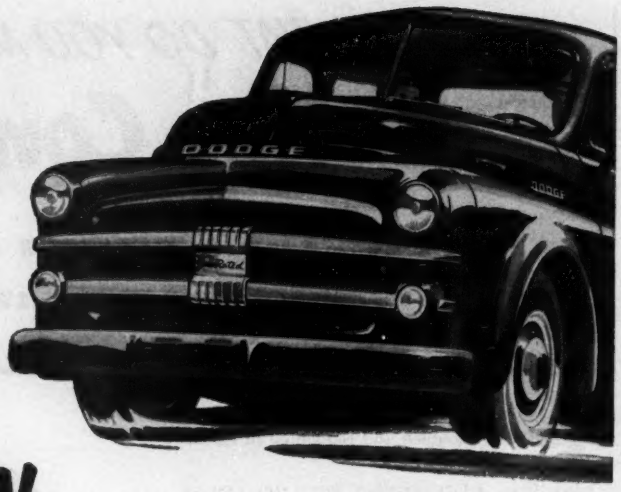
LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

"Job-Rated" for CONTRACTORS



Brand new DODGE "Job-Rated" TRUCKS

The trucks that do the most for you!

More than 50 BRAND-NEW improvements . . . including

NEW! SMOOTHER RIDE with new, "Oriflow" shock absorbers—standard equipment on ½-, ¾-, and 1-ton models.

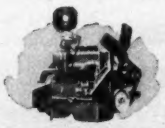
NEW! EASIER LOADING with lower ground-to-floor height—on all models through 2 tons.

NEW! EASIER BAD-WEATHER STARTING with new moistureproof ignition and high-torque starting motor.

NEW! MORE ECONOMICAL PERFORMANCE with higher (7.0 to 1) compression ratio—on all models through 1 ton.

NEW! SMOOTHER ENGINE IDLING with "hotter" spark plugs; on all models through 1 ton.

BRAND-NEW POWER—You get more power than ever—engineered for *your* job! Eight great engines—with net horsepower stepped up as much as 20%! You get more of the *right* power for your needs—with top economy! Yet, with all their extra value, new Dodge *"Job-Rated"* trucks are priced with the lowest.



BRAND-NEW EASE-OF-HANDLING—You can turn new Dodge *"Job-Rated"* trucks sharper . . . maneuver them more easily. New shorter turning diameters! New worm-and-roller steering gears! All this—plus cross-steering, wide front tread and short wheelbase.

BRAND-NEW BRAKING SAFETY—New Dodge *"Job-Rated"* trucks are the trucks with new molded, tapered Cyclebond brake linings! New *extra-quiet* action! New extra-smooth, extra-sure stopping! New longer lining life! (On new 1½-ton and up trucks, except air brake models.)

PLUS THIS EXCLUSIVE! Gyrol Fluid Drive available on ½-, ¾-, and 1-ton, and Route-Van trucks.

See your Dodge Dealer today for

THE TRUCK THAT FITS YOUR JOB... A DODGE Job-Rated TRUCK

What's behind the Euclid name?

Building a road in the mountains of Colorado—this "Euc" is dumping 15 tons of fill material.

Working on a levee in Arkansas—Bottom-Dump Euclids are the outstanding choice of levee contractors.

Getting a 22-ton load of rock at Downsville Dam in New York—"Eucs" are built for heavy off-the-highway work.

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The Euclid reputation for long, dependable service life and efficient performance is backed by strategically located distributors and factory branches. Adequate stocks of genuine Euclid parts and the facilities of this world-wide organization assure prompt service to Euclid owners everywhere.

The fact that 80 per cent of all Euclids built are still in use today is proof of their rugged construction and staying power on the toughest jobs. Readily available parts and service result in less down time and customer satisfaction.

Have your Euclid Distributor show you how "Eucs" can lower your off-the-highway hauling costs. Ask about the models best suited for your own job requirements.

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CLEVELAND 17, OHIO
CABLE ADDRESS: EUCLID CODE: BENTLEY

MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

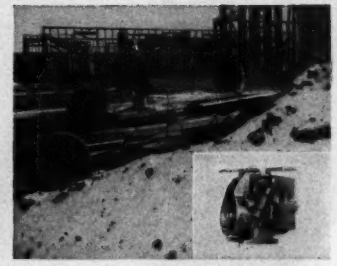
EUCLIDS *Move the Earth*

Out of the more than 50 models...

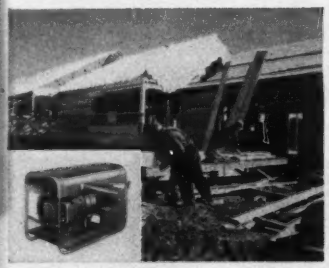
Which ONAN Electric Plant is best for your job?

750 watts, A. C.—Single-cylinder, air-cooled engine. Lightweight and compact. Easily carried around. Widely used by electrical and plumbing contractors for power tools.

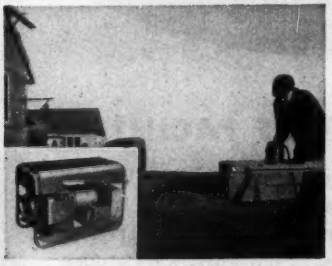
1000 watts, A. C.—Single-cylinder, air-cooled engine. Easily portable. Available with carrying handle or dolly-mounted. Furnishes plug-in power for electric saws, planers, drills, lights, etc.



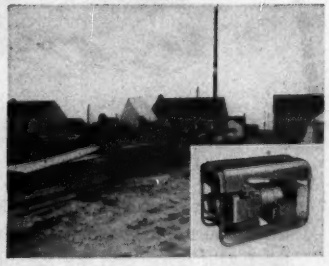
1500 watts, D. C.—Single-cylinder, air-cooled. Powerful enough to handle high-capacity power saws. (Photo shows trailer-mounted unit) Ideal for crew building single dwelling.



2,000 watts, D. C.—Two-cylinder opposed, air-cooled engine. Smooth-running, light weight. Furnishes enough power for several motor-driven tools. Easily carried by two men.



3,000 watts, A. C.—Two-cylinder opposed, air-cooled engine. Four plug-in receptacles. Weighs only 315 pounds. Supplies plenty of electric power for heavy-duty saws and other motor driven tools.



5,000 watts, D. C.—Two-cylinder opposed, air-cooled engine. More power for its size and weight than any electric plant you've ever seen. For large housing or commercial projects.

WHATEVER TYPE OF JOB YOU HAVE, Onan portable electric plants will speed it up, cut costs and improve workmanship. Even where highline power is not available you can use fast-working, cost-cutting electric tools *from footings to finishing!*

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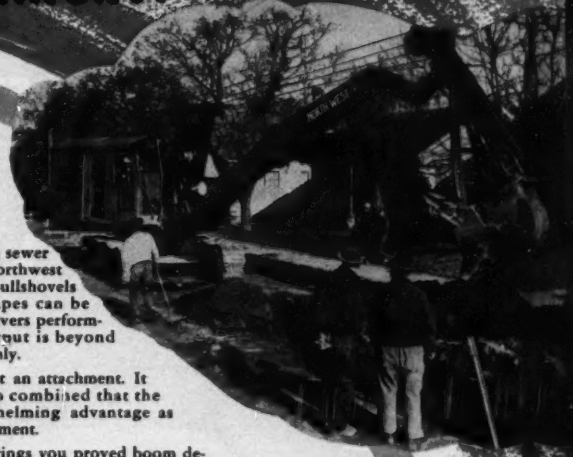
-not just an attachment!



PERFORMANCE in the hands of leading sewer and pipeline contractors has established the Northwest Pullshovel as the standard by which other pullshovels and backhoes are measured. General shapes can be copied, but the tested know-how that delivers performance, reduces upkeep and insures output is beyond copying and results from experience only.

The Northwest Pullshovel is not just an attachment. It represents a group of features so combined that the ensemble represents an overwhelming advantage as excavation and trenching equipment.

The Northwest Pullshovel brings you proved boom design for maximum digging and better dumping ranges. You have the "Feather-Touch" Clutch Control for easier operation, the Cushion Clutch, Uniform Pressure Swing Clutches and a crawler design with demonstrated ability to stand up in the long travel service characteristic of usual pullshovel conditions.

Plan ahead and don't buy a one-purpose trenching machine.

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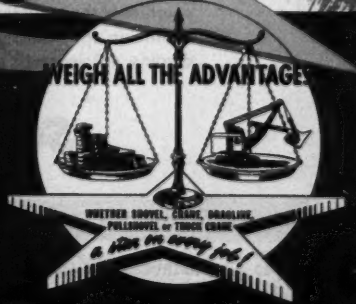
WHETHER SHOVEL, CRANE, DRAGLINE, PULLSHOVEL OR TRUCK CRANE

it's a Leader!



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CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Barber-Greene

NEW *Runabout*

MODEL 705A WITH FINGER-TIP HYDRAULIC

Lowest Cost per Foot of Trench, All Ground, All Weather

The Model 705A Runabout—widely preferred by contractors, gas, telephone, water and power companies for service trenching—now presents the Hydra-Crowd which gives the Runabout an infinite range of digging speeds between 0 and 16 feet per minute, independent of the bucket line speed.

Hydra-Crowd—hydraulic transmission of power to the driving wheels—allows the operator to coordinate the crowding and bucket line speeds, balancing the two functions to get maximum digging efficiency. It makes the Runabout truly an all-ground, all-weather ditcher. For every digging condition, with the Hydra-Crowd the Runabout offers the proper combination of bucket line speed and forward speed—instantly. With a twist of the wrist the operator keeps the Runabout going at top digging efficiency through varying soil conditions—no gear shifting.

Thus—more than ever—the Runabout, with its 15 m.p.h. road speed and Vertical Boom "Milling Action," combines mobility and digging efficiency to make possible lowest cost per foot of trench in all conditions the year around.

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Greene

SERVICE DITCHER

HYDRA-CROWD

CONTROL OF CROWDING SPEED

INDEPENDENT OF BUCKET LINE SPEED

Runabout Features
Mean Outstanding Performance

One-man operation.
Control of digging from cab or ground.
Finger-tip controlled hydraulic hoist for Vertical Boom.
15 mile-an-hour road speed.
Fast digging speeds under all conditions—in everything from loamy soil to hard coral rock.
5½"—7½"—or 10½" cutting widths down to 48" deep.
Digs clean trench—no ramp to be dug out by hand.
Hydraulic backfill blade available.
Instant stop, quick reverse.
Designed from engine to bucket line for ditcher service.
Special high traction differential.
Low bearing pressure.
Year around operation.

Underground piping and wiring for:

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Barber-Greene Company
AURORA, ILLINOIS, U. S. A.

193

Barber-Greene Company
Aurora, Illinois

Send full information on the B-G Model 705A Runabout Service Ditcher.

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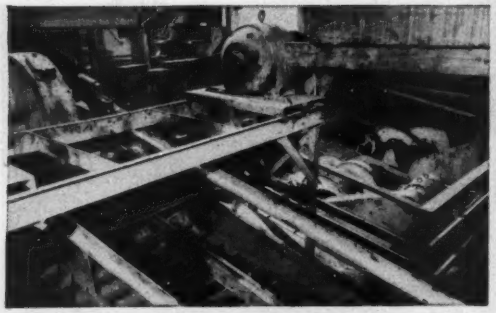
Position.....

Address.....

City..... State.....



Aggregate under 6 inches is separated in shakers at screening plant. A G-E 5-hp motor drives shakers. Plant is completely automatic.

Carrying cement mix along this indoor conveyor system is a crucial step in construction of the dam. Sturdy G-E 100-hp motor drives the belt.

Aggregate for batching plant at Hungry Horse Dam is carried 1600 feet up the canyon wall by conveyor, driven by reliable G-E 100-hp motors in wooden sheds at intervals of 250 to 300 feet.

This Marcy rod mill, used in the gravel-crushing operation at the screening plant, is driven by a G-E 200-hp motor (right center). The motor is protected against heavy dust.

push-button aggregate processing at 700 tons/hr.

... Electrically

General-Shea-Morrison, contractors for the Bureau of Reclamation's Hungry Horse Dam, are going all-out with electric equipment. Best example is their aggregate plant with its network of interconnecting conveyors geared to process 700 tons of raw aggregate every hour. It's one of the most modern installations of its kind in the country—strictly a push-button operation from raw aggregate handling to mixing. Only with modern electric drives can this world's fourth largest dam be completed on schedule in 1952.

As time goes on, contractors are discovering more and more that it pays to electrify. With co-ordinated use of G-E motors and control and G-E power-distribution systems, they're getting safer, more flexible, and more efficient operation. *Apparatus Department, General Electric Company, Schenectady 5, N.Y.*

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job —at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.

GENERAL ELECTRIC

664-16

"With just ONE SKIL Radial Saw—

SKIL Radial Saw Model 450

A complete construction workshop. 2 h.p., 14" blade; 3 or 5 h.p., 16" blade. Easily operated with speed and precision by one man. SKIL RADIAL SAWS also available in 115/230 volts and 220/440 or 550 volts with manual or magnetic control.

1 "We are cutting lumber for 500 houses . . .

2 "Keeping 17 men busy at all times with just one saw operator . . .

3 "We have cut more than a million board feet of lumber . . .

4 "We have had practically no maintenance cost in 2 years of use."

"The SKIL Radial Saw is a MUST on Multiple home construction"

Say Dewey and Willis Larr, builders in Dallas, Texas.

"One saw keeps 17 men busy at all times"—Keep the job moving with a SKIL Radial Saw to pre-cut joists, bridgings, studs . . . to cut and notch rafter assembling into the roof trusses. The SKIL Radial Saw makes any cut, groove, or shape . . becomes a complete on-the-job workshop operated by just one man.

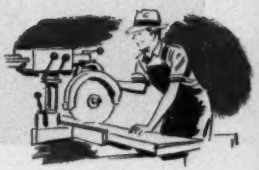
"Practically no maintenance cost in 2 years"—On the job every day for 2 years . . . at practically no maintenance cost. SKIL Radial Saws are built to give longer, trouble-free service. All parts precision made. Motors completely enclosed for protection against dirt, dust and moisture. Felt wicks keep rails clean.

"Greater accuracy in gang cutting"—Precision gang-cutting . . . with alignment to within 1/100 inch—gives constant accuracy for the life of the SKIL Radial Saw. That saves cutting . . . means less waste and faster work.

"Quick adjustments save time"—One-man operation with front-positioned adjustment controls. Common cutting angles automatically cut to save time, eliminate guesswork.

SAVE TIME, SAVE WORK, SAVE MATERIAL, SAVE MANPOWER. USE A JOB-PROVED SKIL RADIAL SAW.

Ask your SKIL Distributor to demonstrate this better saw today or write for literature.



SKIL

PORTABLE POWER TOOLS

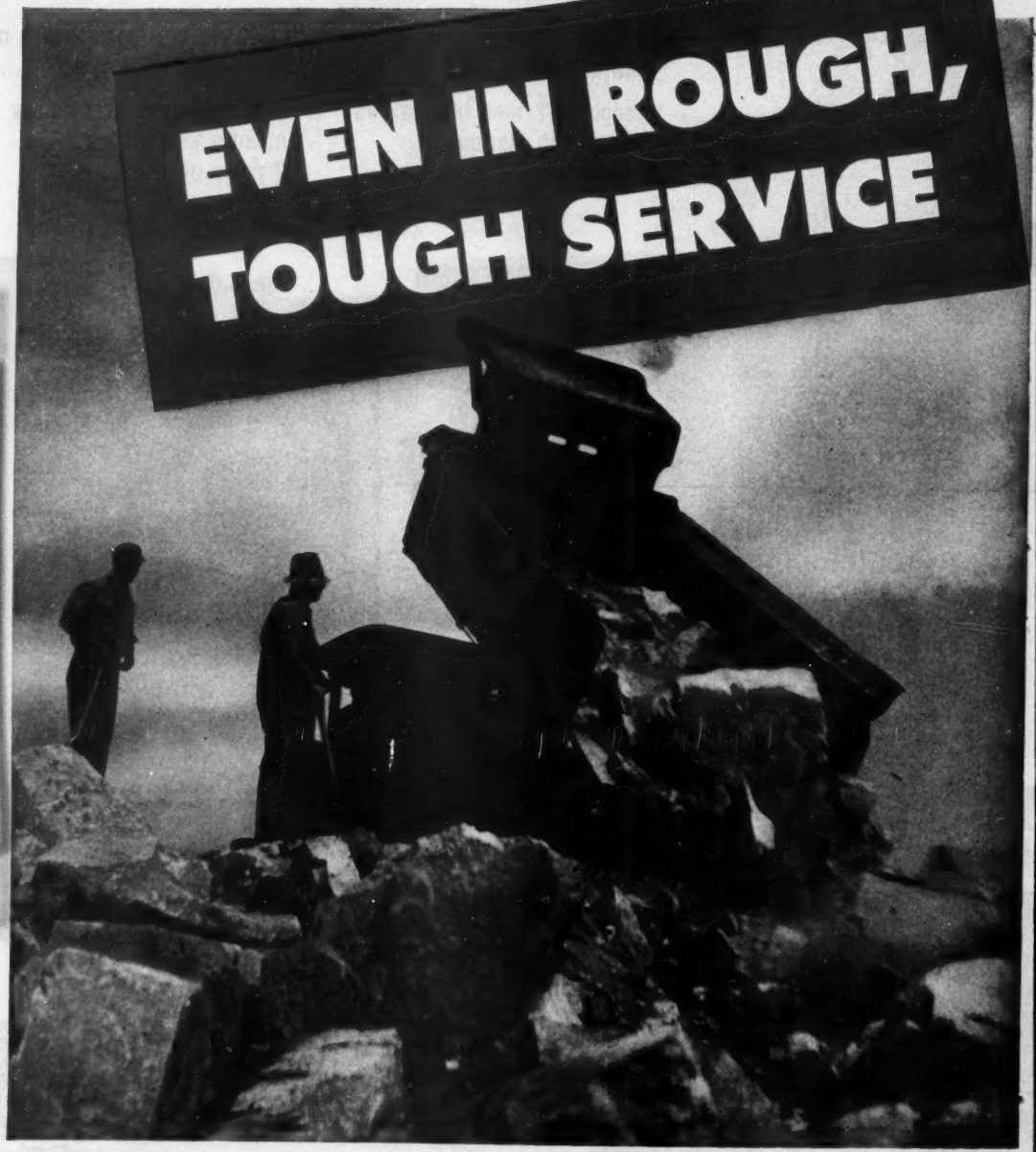
SKIL Saw

SKIL Disc Sander

SKIL Belt Sander

SKIL Driver

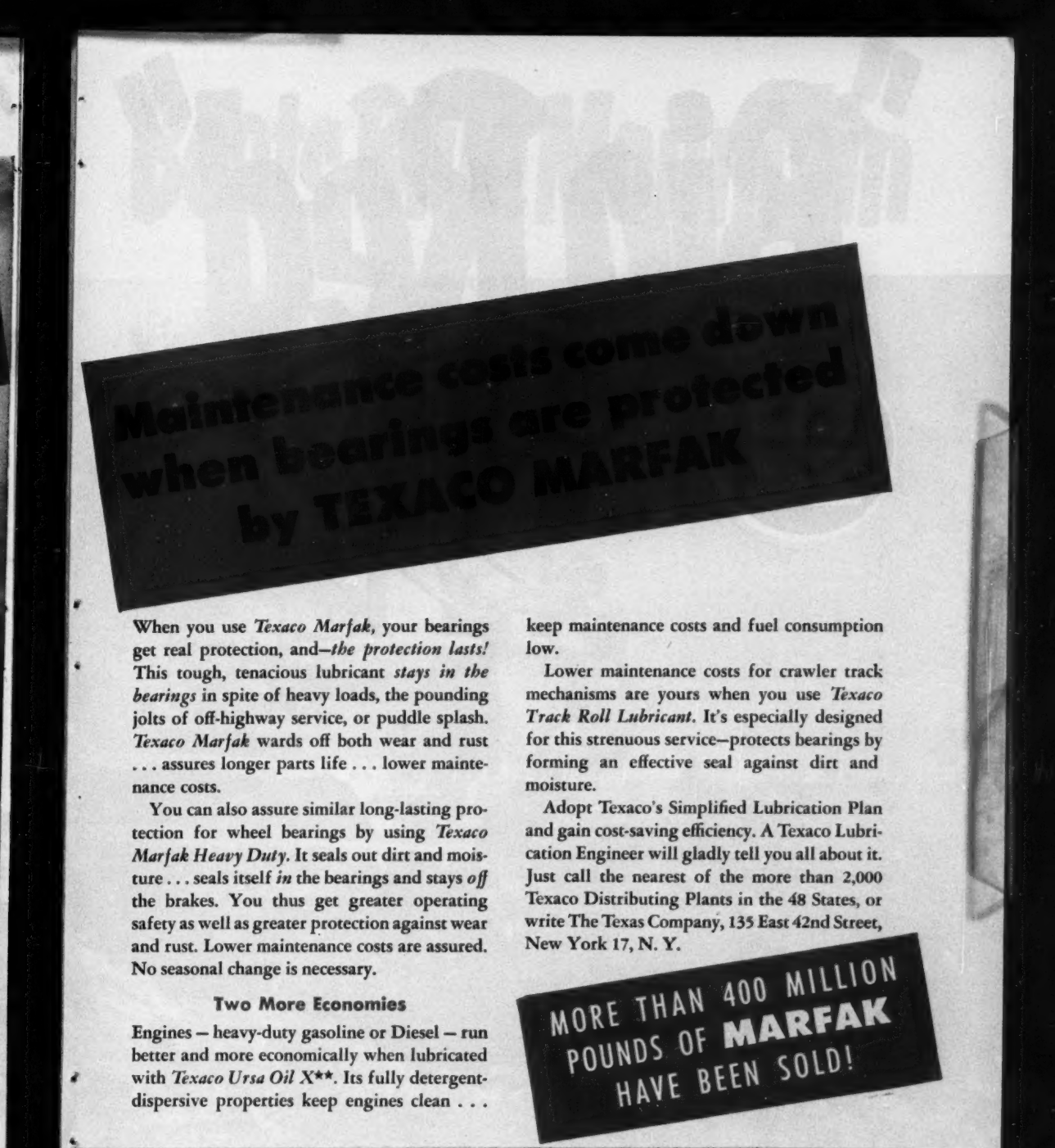
SKIL Products are made only by SKILSAW, INC.
5033 Elston Avenue, Chicago 30, Illinois
Factory Branches in principal cities
In Canada: Skilsaw, Ltd., 66 Portland Street, Toronto, Ontario



TUNE IN...
TEXACO STAR THEATER
starring
MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.

TEXACO

TEXACO



When you use *Texaco Marfak*, your bearings get real protection, and—*the protection lasts!* This tough, tenacious lubricant *stays in the bearings* in spite of heavy loads, the pounding jolts of off-highway service, or puddle splash. *Texaco Marfak* wards off both wear and rust . . . assures longer parts life . . . lower maintenance costs.

You can also assure similar long-lasting protection for wheel bearings by using *Texaco Marfak Heavy Duty*. It seals out dirt and moisture . . . seals itself *in* the bearings and stays *off* the brakes. You thus get greater operating safety as well as greater protection against wear and rust. Lower maintenance costs are assured. No seasonal change is necessary.

Two More Economies

Engines — heavy-duty gasoline or Diesel — run better and more economically when lubricated with *Texaco Ursa Oil X***. Its fully detergent-dispersive properties keep engines clean . . . keep maintenance costs and fuel consumption low.

Lower maintenance costs for crawler track mechanisms are yours when you use *Texaco Track Roll Lubricant*. It's especially designed for this strenuous service—protects bearings by forming an effective seal against dirt and moisture.

Adopt Texaco's Simplified Lubrication Plan and gain cost-saving efficiency. A Texaco Lubrication Engineer will gladly tell you all about it. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

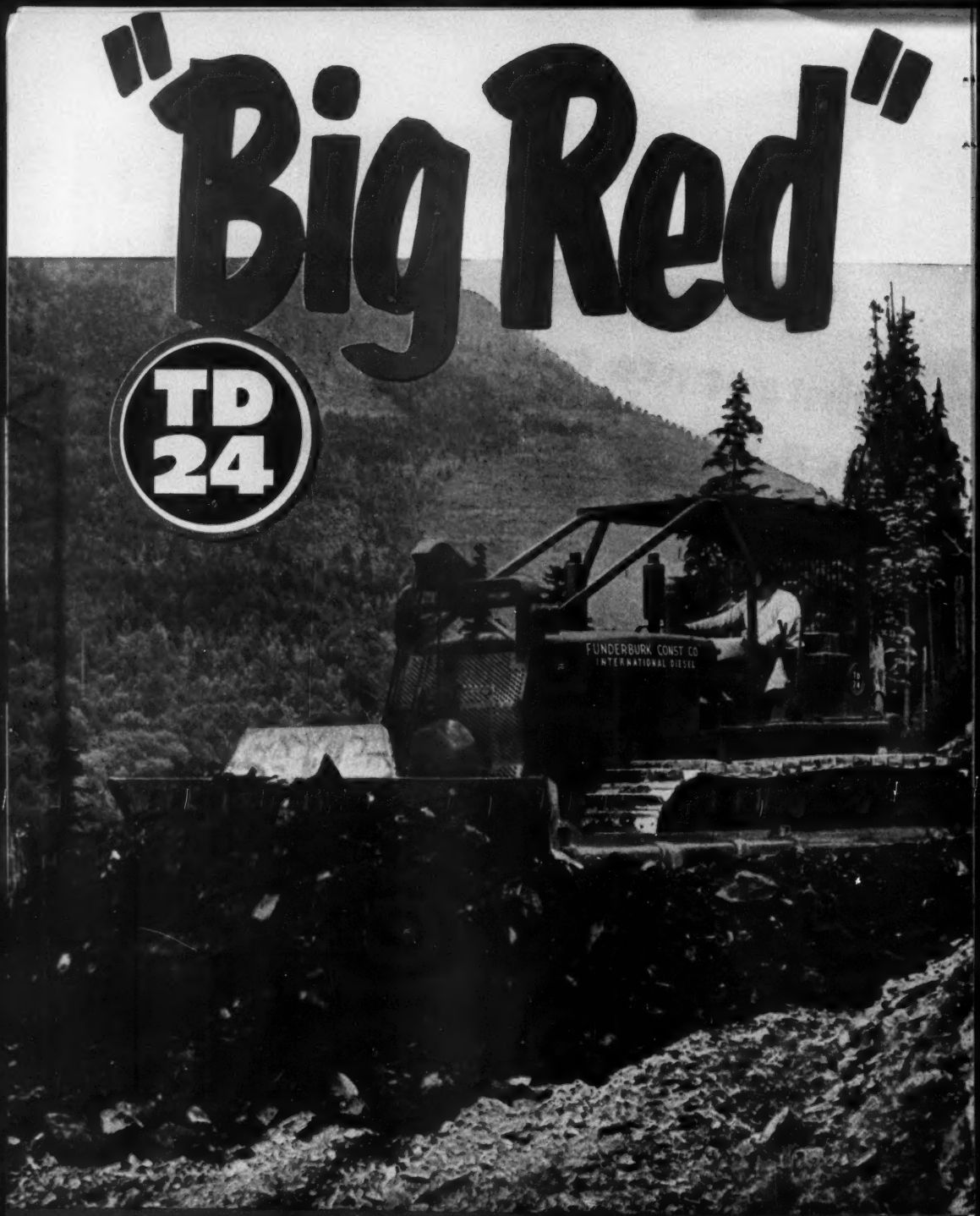
MORE THAN 400 MILLION POUNDS OF **MARFAK** HAVE BEEN SOLD!

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

"Big Red"

TD 24



Beats Blue Mountain

Read how the International TD-24 pays off, helping build mountain-top radio station.

Out near Seattle rise two 3,000-foot peaks that have suddenly become mighty important. Blue Mountain and Wheeler Mountain, a mile apart, are the bases for new antenna towers of what will be one of the most powerful radio stations ever built.

Toughest part of the construction job was building roads up the mountains. First the Funderburk Construction Company conquered Mt. Wheeler. Then they bought a new International TD-24 and started gouging out the rocky road to the top of Blue Mountain. And with the big red champ on the job, they moved faster, easier, more profitably.

"It's the TD-24's power and Planet Power steering that pay off," says Ed Funderburk. "The TD-24 stays up in the bank easier and pushes bigger bladefuls farther than any other tractor can. This means lots more material moved at the end of the day."

It means more work done on any job. See for yourself. See your International Industrial Distributor and get the real low-down on the TD-24. And check up on the service your distributor can give you over the hard-working years ahead. With factory-trained mechanics and ample shop facilities, backed up by International's strategic network of parts depots across the country, your International Industrial Distributor is all set to keep your International power on the job for you and the nation!

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

TOP THIS ONE! Building a 14-mile road to "top" Blue Mountain means dozing down 250,000 cubic yards of material—mostly rock. It's a job that calls for the brute power of the world's most powerful crawler—the International TD-24.

RECESS FOR THE CHAMP! It's child's play for Ed Funderburk's TD-24 when the skinner lays off dozing long enough to pull stumps from the new road's right-of-way.

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

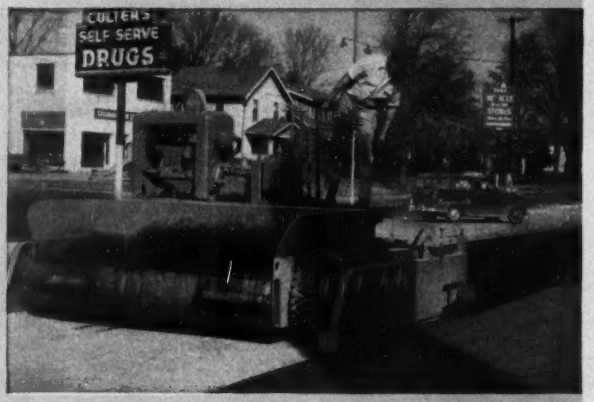
These labor-saving JAEGER tools do

Up to 12" thickness in widths to 11', lesser thicknesses to 12'6"

Lay bigger tonnage, accurately, with low cost Paver-Type Aggregate Spreader

Costs half the price of bituminous pavers. Efficiently lays bigger tonnages of base and surface aggregates, free-flowing hot or cold bituminous mixtures or plant-mixed stabilized soil. Crawler or 4-wheel drive operates on subgrade, not on newly-laid material. Straightedge runners insure accuracy of strike-off for highway, street and airport base and both base and top of secondary roads, parking areas and drives. Two models, to work with any size trucks. Ask for Catalog SPS-1.

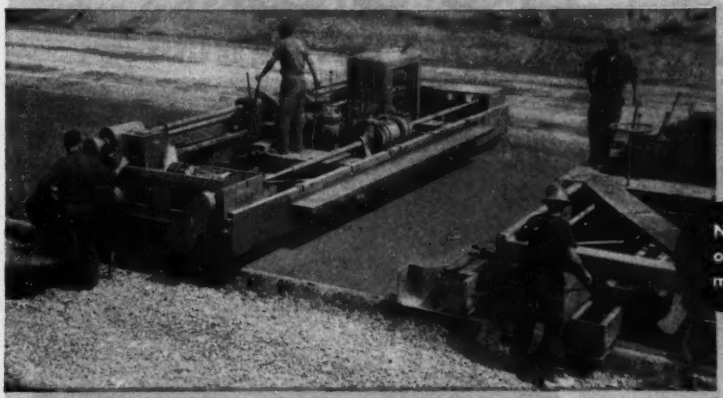
Big savings to small contractors paving parking lots and drives.



For precision paving with all types of bituminous material, Jaeger improved Model BP-5

The only bituminous paver that (1) operates entirely on the subgrade or compacted course (2) continuously "averages out" subgrade irregularities by means of straightedge runners, (3) automatically matches adjacent course, curb or other grade line, (4) works mat to any uniform desired density with fast-oscillating tiltable screeds, (5) adjusts for 9' to 12½' widths with the twirl of a wheel, (6) can lay flush to curbs or headers. Ask for Catalog BP-0.

what machines could never do before



Note how oscillating screed on spreader accurately meters material to finisher

Jaeger 3-Screed Paving Team gives steady high production of better finished slab

Latest Screw-and-Screed Spreader remixes, compacts, and strikes-off material as fast as dual drum pavers can produce it, *then, with its oscillating 12" screed, accurately meters the exact amount of material required* for the finishing machine. No excess or deficiencies, no costly carry-back, always uniform compression under the finisher screeds.

Type "X" Finisher, with its transverse front screed and diagonal rear screed, gives a precision finish, *can carry material uphill and place it solidly against higher form on pitched slab and superelevated curves,* eliminates much costly hand work and finishes harsh material faster without tearing.

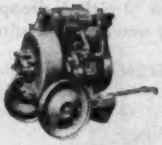
This 3-screed "team," exclusive with Jaeger, has saved the cost of a second finishing machine on high production work in various States. Screw-and-Screed Spreader is also adaptable for bituminous pavements. Ask for Catalogs FX-8 and CSS-0.

"New Standard" AIR-PLUS Compressors deliver 15% to 25% more air, to do 30% to 40% more work

Two heavy duty breakers, powered by a Jaeger Model 125 compressor, will break pavement up to 40% faster than the same tools run by any 105 ft. compressor. From the Model 75, for one breaker, up to the Model 600, for two heavy duty wagon drills plus an auxiliary drill, Jaeger "new standard" sizes provide the additional air you need to run a full set of tools at top pressure instead of weak 70 lbs.—delivered at the lowest cost per cubic foot of air of any compressors on the market. Ask for Catalog JC-1.

"Speedline" Mixers

More batches per hour with fast "Skip Shaker" loader and thorough mixing, fastest discharging "Dual Mix" drum. Machined steel drum tracks, automotive-type transmission. Sizes 3½S to 16S portables.



"Sure Prime" Pumps

Built oversize for lower speed, longer life operation. Two independent, simultaneous priming actions—doubly sure. Positively lubricated seals—exclusive with Jaeger. De-watering pumps to 240,000 gph; pressure pumps for up to 275 psi; well point systems.

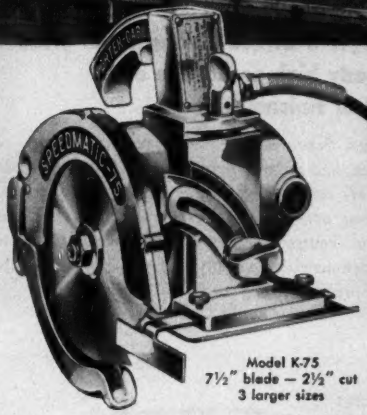
Before you bid—before you build—see your Jaeger distributor

THE JAEGER MACHINE CO.
800 Dublin Avenue, Columbus 16, Ohio
Cable BIGANLITLE

Sales, Rentals and Service in 130 Cities of the U. S. and Canada

Balanced

to take the drudgery out of ALL DAY SAWING . . .



Model K-75
7½" blade — 2½" cut
3 larger sizes

Escape "3 o'clock droop" . . . use the saw that lets you do heavy sawing hour after hour . . . *without tiring strain!*

SPEEDMATIC is "balanced when you lift it." Grip is directly over the center of gravity . . . only one hand needed to hold the saw in a balanced, natural cutting position.

SPEEDMATIC is "balanced while you run it." There's no powerful torque reaction or jerk to the side when you press the trigger . . . none of the twisting forces that strain your wrist or forearm when starting to cut. While cutting, the SPEEDMATIC always rests on the main piece . . . at the finish of cut-offs it doesn't suddenly nose dive, forcing you to lift it hundreds of times a day.

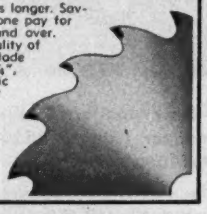
All in all, SPEEDMATIC'S Balance means more and faster sawing per hour . . . less fatigue at the end of a big day's work. See for yourself — use a SPEEDMATIC on your next job.

Now . . . CARBIDE TIPPED Saw-Blades

For Formica, Masonite, Plywood, Asbestos-Cement board, Concrete-form Lumber, etc.

Stay Sharp 10 to 100 times longer. Savings in sharpening cost alone pay for this type of blade over and over. Outstanding speed and quality of cut on work ordinary blade can't handle. Sizes: 6¼", 7½", 8". Fit Speedmatic and Guild Saws; also other portables and saw tables with ⅝" arbor.

Write for full information about Speedmatic Saws and practical accessories that speed-up construction work.



Speedmatic SAWS

PORTER-CABLE Machine Co.

7024 N. Salina St., Syracuse 8, N. Y.

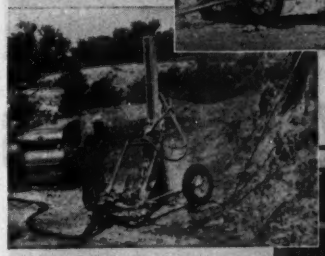
In Canada write: Strongridge, Ltd., St. Catharines, Ont.

Manufacturers of Speedmatic and Guild Electric Tools
The Balanced Line

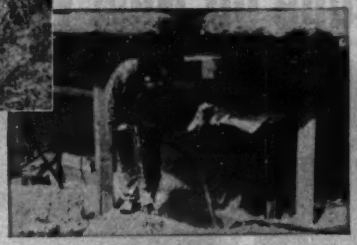
Progress Reports Reveal Faster Progress

when *Gardner-Denver's* in your picture!

Air pressure's always up —when Gardner-Denver Portables feed your lines. Cylinders are water-cooled *all* the way down for all weather efficiency—compressors are two-stage for any altitude performance.



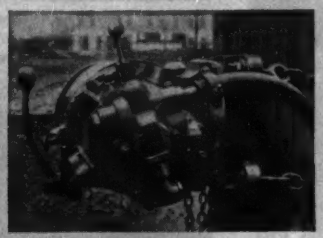
Holes are spotted quickly—drilled fast and clean with Gardner-Denver Wagon Drills.



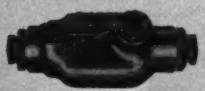
Demolition proceeds at a steady pace—Gardner-Denver Breakers are easy on the operator—tough on concrete.

A clean hole drills faster — and Gardner-Denver Sinkers are noted for hole cleaning ability, powerful rotation.

Packs backfill swiftly and firmly—Gardner-Denver Tampers are easy to hold—seldom require maintenance—non-freezing.



For speedy pull and haul—powerful Gardner-Denver Air Hoists are easy to control.



Saves shop time for all pneumatic tools—L012 Automatic Oiler shuts off air when it runs out of oil.

Keeps water out of your way—Top-Suction VP4 Sump Pump won't burrow in the mud—keeps grit out of the pump shaft seal.

Write for further information.

Clay or hardpan doesn't waste time—when tackled with Gardner-Denver Clay Spaders and Trench Diggers.

SINCE 1859

GARDNER-DENVER

THE QUALITY LEADER IN PUMPS, COMPRESSORS AND ROCK DRILLS

Gardner-Denver Company, Quincy, Illinois

In Canada:

Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

General view of paving operation. Traffic uses temporary dirt road (note car at right), while first lane is in progress.

Building New Bridge on New York's Route 66

Left to right: L. R. Addis, inspector, New York State Highway Department; Nicholas Serafini, contractor; Peter Colarusso, materials contractor; and Jack White, superintendent.

These men are placing Bethlehem Hinged-Bar Mat over first course. The hinged mat folds over double, making it economical to truck, easy to install.

To eliminate a hazardous section of busy Route 66, the New York State Highway Department authorized the relocation of approximately a half-mile of this 2-lane highway near Hudson, N. Y. The project, consisting of a bridge over Claverack Creek, plus approaches, was handled by Serafini Construction Co., Binghamton, N. Y., and is shown in part in the accompanying photographs. Bethlehem furnished steel piling, reinforcing bars, structural steel and bar mats.

Bethlehem Reinforcing Bars in bridge abutment, getting final check before pouring of concrete.

Driving Bethlehem H-Piles to provide firm foundation for bridge. Bethlehem Structural Steel, shown in foreground, is ready for placing.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail Guard Rail Posts • Wire Rope and Strand • Pipe Hollow Drill Steel • Spikes • Bolts and Nuts Tie-Rods • Timber Bridge Hardware Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

TURN YOUR PROBLEMS TO PROFITS

MIXERMOBILE EQUIPMENT

Ruggedly built to fit all projects, both large and small, the MIXERMOBILE trio means more jobs covered... reduced labor costs... savings in time and expense of moving heavy equipment. Each unit handled by a single operator travels at normal highway speeds and is adaptable to a wide variety of construction jobs.

SCOOP
Model C

The versatile Model "C" with exclusive planetary drive for dependable power has 6 "quick change" attachments. Saves bringing in "extra" equipment. Three-quarter cu. yd. scoop is standard equipment.

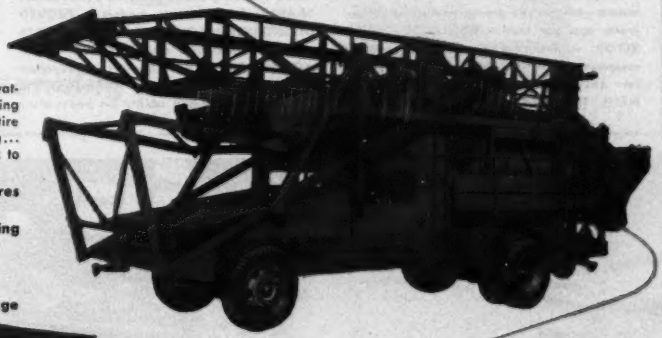
- **Transports, elevates and pours concrete.**
- **Shovels, loads, transports dirt or bulk materials.**
- **Lifts and places forms and timbers.**
- **Lifts heavy equipment.**
- **Reaches extra height.**

ATTACHMENTS INCLUDE: Swivel-type concrete hopper. Scoops in 5 sizes. Lift forks. Special fertilizer or hay fork. Crane boom. Track extensions up to 26 feet.

2-YD. MIXERMOBILE
Model M-7

This complete mobile concrete mixing and elevating plant eliminates costs of hauling and erecting expensive equipment. One man handles the entire operation—quickly "sets-up" ready for pouring... then controls every operation from dump truck to deck.

- **Improved batch-timer and counter insures uniform mix.**
- **New electronic water meter gives unerring accuracy.**
- **Sturdy planetary drive hoist clutches.**
- **Mixes up to 50 yards per hour.**
- **Portable elevating and agitating storage plant for *ready mix*.**



DUO-WAY SCOOP

Power-packed dozer at one end... scoop at the other. The Duo-Way is designed for top performance. Unit with 84-inch dozer blade, optional, at one end, and 1-cu. yd. scoop at the other end performs four operations—loader, dozer, truck and tractor.

- **Dozes out, then scoops up dirt, lifts, transports and loads.**
- **Operator in sidesaddle seat has perfect vision and control.**
- **Rugged planetary drive for "extra" power.**
- **Improved hydraulic-controlled track and dozer.**
- **Complete assortment of attachments for versatility.**

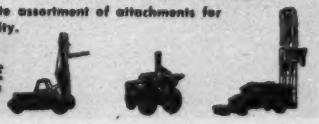
Write for literature and address of your nearest dealer.

We reserve the right to make improvements in design and specifications without notice.

MIXERMOBILE MANUFACTURERS

BOX 7527 **PORTLAND 20, OREGON**

MIXERMOBILE



Finest Buy in the Land . . . on *Every* Count!

NEW 1951 CHEVROLET

Advance-Design TRUCKS

These new 1951 Chevrolet trucks are tops in value. They're tough and rugged. They're loaded to the brim with power. They're thrifty . . . move massive loads . . . handle like no other truck. Chevrolet's latest haulers have 51's finest new features, too. Features like new, super-effective brakes that are extra-safe and easy to operate. Features like Chevrolet's Dual-Shoe parking brake, Chevrolet's new Ventipanes and new cab seats that bring you comfort with a capital "C." Visit your Chevrolet dealer and look over these great new trucks. You'll find the right truck for *your* job!

CHEVROLET MOTOR DIVISION, *General Motors Corporation*
DETROIT 2, MICHIGAN

CHEVROLET

ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—the 105-h.p. Loadmaster or the 92-h.p. Thriftmaster—to give you greater power per gallon, lower cost per load • **POWER-JET CARBURETOR** — for smooth, quick acceleration response • **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement • **SYNCHRO-MESH TRANSMISSIONS**—for fast, smooth shifting • **HYPOID REAR AXLES**—for dependability and long life • **NEW TORQUE-ACTION BRAKES**—for light-duty models • **PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES**—for medium-duty models • **NEW TWIN-ACTION REAR BRAKES**—for heavy-duty models • **NEW DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models • **NEW CAB SEATS**—for complete riding comfort • **NEW VENTIPANES**—for improved cab ventilation • **WIDE-BASE WHEELS**—for increased tire mileage • **BALL-TYPE STEERING**—for easier handling • **UNIT-DESIGN BODIES**—for greater load protection • **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.

SIMPLIFIED

Austin Overshot Loader

Check these outstanding features:

Drive...simple, positive; no cable or hydraulic drives; wears longer.

Front Power Takeoff...gives live bucket without master clutch being engaged; accurate control; easier to operate.

Mounts on Main Frame of Tractor

Doesn't Interfere With Servicing of Tractor

Pre-Assembled...entire drive unit is assembled and adjusted at factory—ready for you to put on.

Doesn't Interfere With Drawbar

Automatic Control...bucket stops automatically in dumping position.

Brake Control...hydraulic brake on rear spool shaft to control speed of bucket return.

Uses No. 24 Cat P.C.U.

Good Visibility for Operator

Easily Converted to Dozer in 20 Minutes

SPECIFICATIONS

MODEL 6 C

Fits wide gauge, non-oscillating D6, without modification. Wide gauge, oscillating D6 can be modified to accommodate the 6C.

Standard Bucket Capacity in cubic yards (rated) 1½

Bucket width .....6'	Overall height.....18' 4" (bucket raised)
Overall width .....8'	Overall length.....20' 8" (bucket lowered)
No. of bucket teeth.....6	
Dumping clearance..8' 1"	Loading cycle (seconds) 15
Overall height.....8' 2" (bucket lowered)	Weight (approx. pounds) 9,500

EXPORT DIVISION
P. O. Box 5043 Terminal Annex
Denver 17, Colorado

JOHN AUSTIN, INC.

2 SANTA FE DRIVE
DENVER, COLORADO

Printed in U.S.A.

OCS*

Killer of Many Belts before their time

*Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method. Only Rotocuring eliminates this major cause of belt failure.

...but you won't find this common cause of failure in BWH ROTOCURED BELTS!

In the flat press method of curing, a segment of the belt is double cured every 30 to 40 feet. These overcured segments of 2″ to 4″ in width across the entire belt can't be avoided in flat press curing because the previously cured sections are advanced each time less than a full press length. Result: a number of structurally weak, failure-inviting segments (the exact number depending on the length of the belt).

With BWH ROTOCURED belts there are no overcured segments because the vulcanization is *continuous*. You as a belt user benefit *4 ways:*

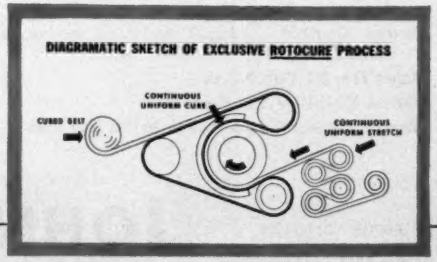
1 You get uniform, abrasion-resistant covers *overall.*

2 You get improvement of flex life up to 40%.

3 You get no mechanical distortion (inherent with flat press curing at the press ends).

4 You get constant uniform stretch *always.*

These product advantages are why BWH ROTOCURED conveyor belts last longer, require less maintenance and lower the cost per ton of material conveyed. You get them too in BWH transmission belts, plus a higher coefficient of friction (no dusting agents required with Rotocure—hence tensions are minimized and belts last longer). Call in your BWH distributor or write us direct for complete details.



BWH DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U.S.A.

"TAKE A LOOK JOE"!...

...I made this cut with my new CLIPPER in just 10 SECONDS!

"...and Joe, look at the smooth, straight edges on that material—they're perfect! The finished job looks better, costs less and can now be completed in record time."

NINE MODELS TO CHOOSE FROM
PRICED from $195.00

Yes... CLIPPER MASONRY SAWS Make *Any* Cut Quickly and Easily!

Regardless of the material hardness—a Clipper Masonry Saw will cut any shape in record time and with smooth simplicity that will amaze you. . . . And with the MODEL HD you can choose your cutting method — cut DUSTLESS in confined areas or Dry for outside operations. Remember too, there are NINE Clipper Models — each designed to economically handle your specific masonry cutting needs.

FREE TRIAL...

The outstanding policy of "FREE TRIAL" has been in effect since Clipper invented the world's first Masonry Saw many years ago! Only through this Clipper "FREE TRIAL" are you guaranteed . . .

- ACTUAL TEST ON THE JOB
- FULL SATISFACTION
- NO OBLIGATION

EXCLUSIVE CLIPPER FEATURES...

PRESSURE EQUALIZER
Makes your blade last longer. Accurate Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Outstanding for blade economy.

SELECT-A-NOTCH
One man easily selects Cutting Head to desired height . . . Whether cutting 12" or 1" material. Operator's hands merely guide. Weight supported by rear bar.

SAVE-A-BLADE DIAL
Just turn the Save-A-Blade Dial to the material hardness and the Pressure Equalizer Spring automatically sets the tension — guarantees faster cutting and longer blade life.

ADJUST-A-CUT CONTROL
Pull the knob — and the Cutting Head is free for finger-tip tilting at any desired angle. Release the Knob — and Head is locked in the desired position.

"WET OR DRY" PUMP
No need to remove belt when cutting dry. No maintenance . . Factory Sealed . . An exclusive Clipper development. Patented Water Application Unit controls flow.

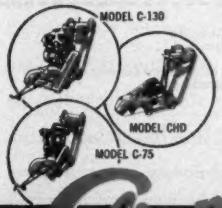
ONE-SPOT OPERATION
From ONE SPOT at the front of this Clipper the Operator performs every cutting operation and makes every saw adjustment.

SOLD ONLY DIRECT From FACTORY To USER

Masonry cutting is a highly specialized field demanding direct Factory-To-You service which Clipper trained technicians can give you.

Your assurance of permanent satisfaction with your Clipper Products is doubled by our Policy of . . .

- DIRECT ATTENTION..
- DIRECT SERVICE..
- DIRECT RESULTS..



...and Now Available- CLIPPER CONCRETE SAWS

Six new "Job-Tested" models—gasoline or electrically powered and in sizes for all concrete cutting from Highway work to Patch work . . . and exclusive with Clipper—a unit which converts a masonry saw to a Concrete or Track Saw. Free literature on request—check and mail coupon.

Serving the World As the World's Largest Manufacturer of Masonry Saws

Clipper

NATION-WIDE DIRECT FACTORY SERVICE

MANUFACTURING CO.
KANSAS CITY 8, MISSOURI
Cable Address: CLIPPER, Kansas City, Mo.

PITTSBURGH • ST. LOUIS • NEW YORK • WASHINGTON, D.C.
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CUT WET or CUT DRY
There's a Clipper Blade for Every Job!

TEAR OUT AND MAIL!

CLIPPER MANUFACTURING COMPANY
2809 S.E. WARWICK, KANSAS CITY 8, MO.

SEND FREE INFORMATION AND LITERATURE ON:

- ☐ NEW CLIPPER MASONRY SAWS
- ☐ CLIPPER CONCRETE SAWS
- ☐ DUSTLESS MODEL HD
- ☐ FREE TRIAL 62

NAME_____
ADDRESS_____
CITY_____ STATE_____

Put safety and reliability into your boom supports

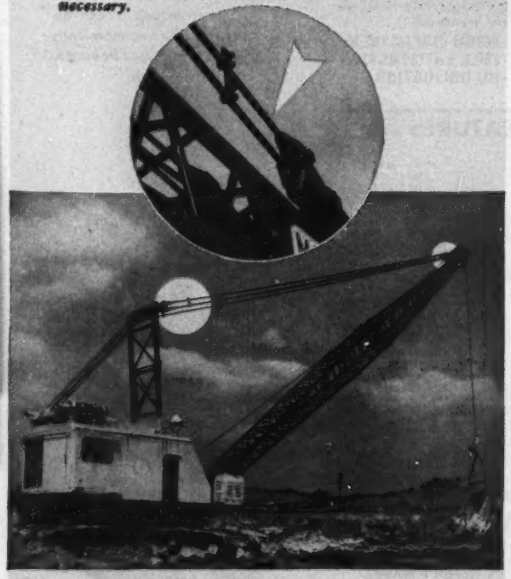
with new Fatigue-Resistant

TIGER BRAND WIRE ROPE ASSEMBLIES

An exclusive development of American Steel and Wire Company

HERE'S THE TROUBLE SPOT

On old style boom supports, vibration was concentrated at the point where the wire rope entered the socket. For machines where vibration was *not* severe, this assembly was satisfactory. But for today's high-power, high-speed machines, *a boom support with much greater resistance to fatigue is absolutely necessary.*



HOW THE TROUBLE WAS ELIMINATED

The New Fatigue-Resistant Tiger Brand Wire Rope Assemblies are an *innovation.* They effectively combat the most severe vibration on power shovels, draglines and cranes. Note carefully the novel end thimble interwoven into the pendant. Vibration is dampened over a long section instead of being concentrated at one point.

2 TO 3 TIMES LONGER LIFE

The new construction has been proved in actual operation to last two to three times longer than the old assemblies — and in some cases even better results were obtained.

INTERCHANGEABLE ON STANDARD EQUIPMENT

You can replace your old boom supports with these new assemblies quickly and easily because essential dimensions such as pin diameters, distance between ears, etc. are the same as for standard open and closed sockets. Send the coupon for complete information.

American Steel & Wire Company
Rockefeller Building, Dept. B-41
Cleveland 13, Ohio
Please send me complete information on your new Tiger Brand Boom Support Assemblies.

Name.....

Title.....

Company.....

Address.....

City.....State.....

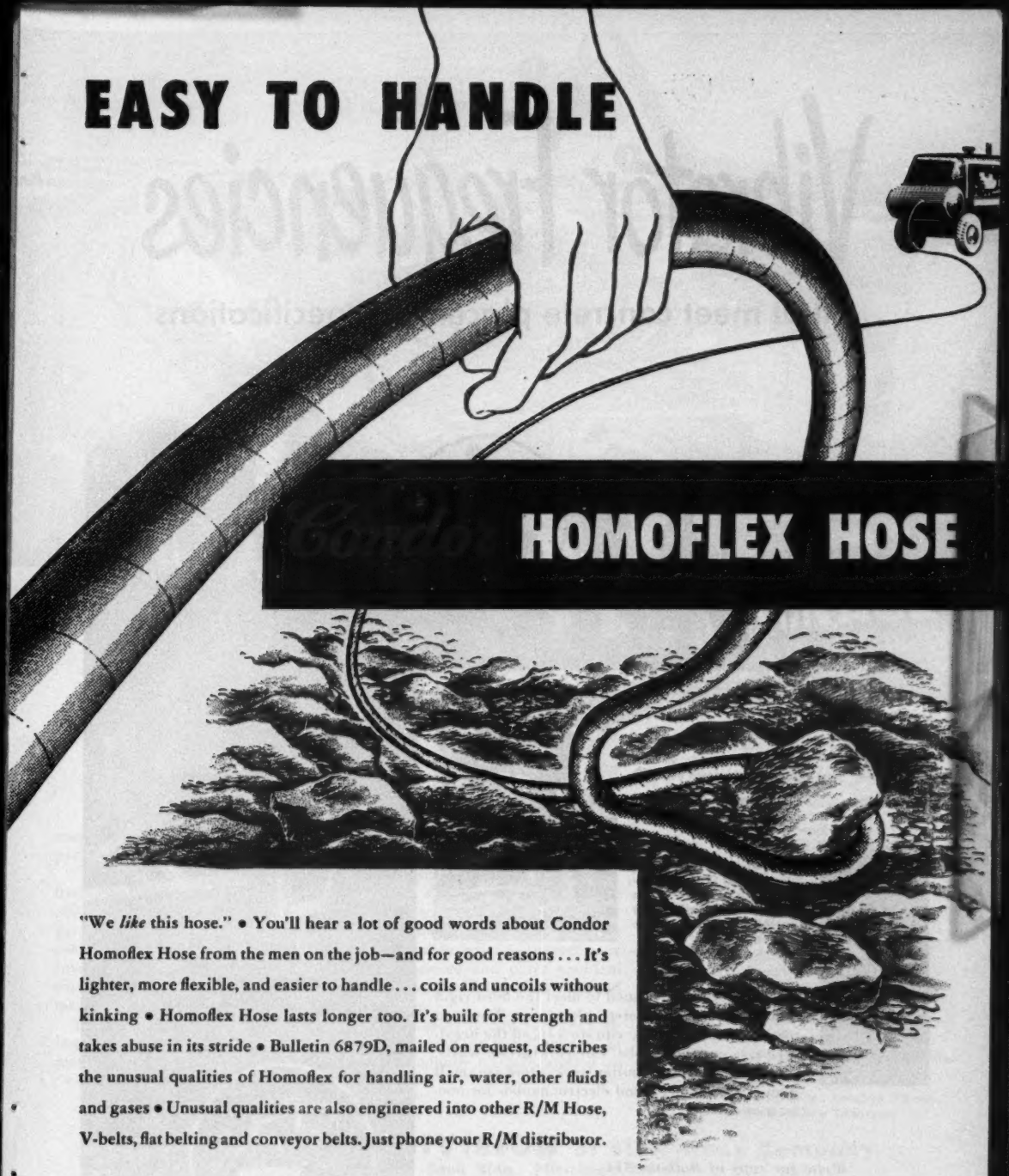
AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

EASY TO HANDLE



Condor HOMOFLEX HOSE

"We *like* this hose." • You'll hear a lot of good words about Condor Homoflex Hose from the men on the job—and for good reasons . . . It's lighter, more flexible, and easier to handle . . . coils and uncoils without kinking • Homoflex Hose lasts longer too. It's built for strength and takes abuse in its stride • Bulletin 6879D, mailed on request, describes the unusual qualities of Homoflex for handling air, water, other fluids and gases • Unusual qualities are also engineered into other R/M Hose, V-belts, flat belting and conveyor belts. Just phone your R/M distributor.

RM

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose • Fan Belts • Brake Linings • Brake Blocks • Clutch Facings • Packings • Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

Vibrator Frequencies

that meet concrete placement specifications

Two-man pneumatic vibrator knocks down and compacts harsh concrete.

Sharp bends and kinks do not affect CP one-man vibrators. The motor is built in the head, eliminating the need for flexible shafts.

CP vibrators are designed to meet the most rigid specifications for concrete placement. Two-man pneumatic and electric vibrators speed the heaviest mass concrete jobs. For reinforced walls, columns, floors, and similar work, there are small diameter pneumatic and electric models for one-man operation.

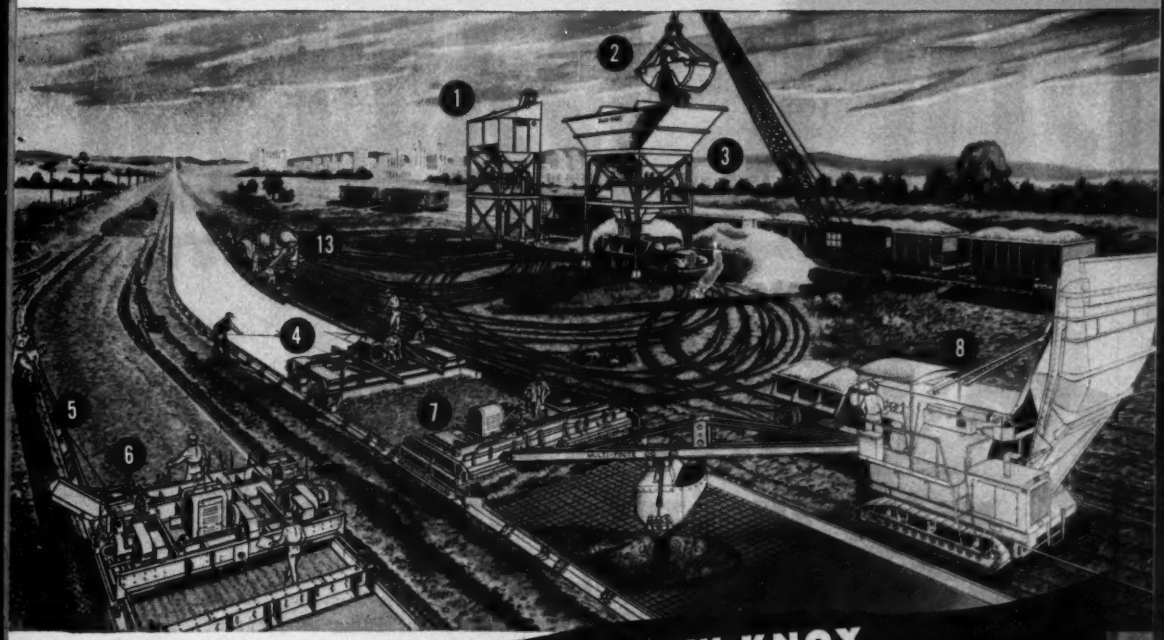
Write for copy of Bulletin 814

The power unit is spotted out of the way and requires no handling or frequent moving. Only the vibrator goes up on the form.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES



The BLAW-KNOX MATCHED EQUIPMENT PACKAGE earns *more money* on every job!

CHECK these money-earning advantages of the Blaw-Knox "Complete Package" of concrete construction equipment—with each unit MATCHED to the others, and the entire package MATCHED to the job!

You get every piece of paving equipment you need for each project—from handling material to finishing the slab. You get the assembly-line efficiency of a balanced fleet of units designed to work together. You get lower operating costs—the result of 100% mechanization. You get everything from one source—backed by one responsibility to protect your investment. You get the solution to your service and parts problem through a nation-wide distributor organization. One Blaw-Knox trained man can service practically all your equipment.

These are a few of the reasons why more and more contractors are finding it practical and profitable to use the Blaw-Knox "Complete Package" of matched equipment. Ask your Blaw-Knox distributor for information on "Complete Package" jobs.

The BLAW-KNOX *"Complete Package"* of paving equipment

1. Bulk Cement Plants
2. Clamshell Buckets
3. Aggregate Batching Plants
4. Finishing Machines
5. Steel Paving Forms
6. Precision Subgraders
7. Paving Spreaders
8. MultiFoote Pavers
9. Adnun Black Top Pavers
10. Concrete Buckets
11. Steel Curb and Gutter Forms

The BLAW-KNOX *"Complete Package"* of ready-mix equipment

2. Clamshell Buckets
12. Truck Mixer Loading Plants
13. New Hi-Boy Trukmixer

BLAW-KNOX DIVISION of Blaw-Knox Company

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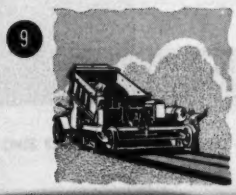
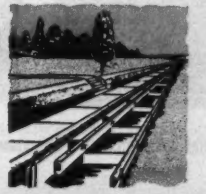
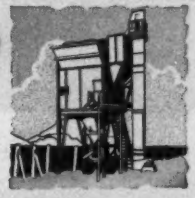
Birmingham • Chicago • New York • Philadelphia • Washington • San Francisco







ROCK RATED!

MEANS RUGGED STRENGTH

P&H MAGNETORQUE*

MEANS SMOOTHER, FASTER SWING

IF YOUR work calls for heavy going — in mine and quarry — here's the machine *designed* for it — the P&H 1055 (3½ yds.).

Here's tough, all-welded construction to take abuse in stride . . . extra stability so you can use all the power you need . . . speed and smooth operation in every function to give you maximum output.

MAGNETORQUE ELECTRIC SWING gives you faster swing, more accurate control with less strain on machine and operator. No more swing frictions with their adjustments and replacement costs.

See this real ROCK RATED shovel in action and judge for yourself.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

P&H

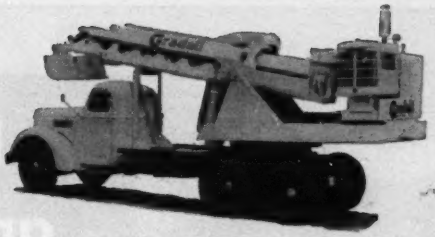
EXCAVATORS

4494 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

SEE FOR YOURSELF HOW GRADALL'S VERSATILITY CUTS YOUR COSTS!



One machine now does the work of many!

Trenching, excavating, ditch digging, grading, backfilling, pavement removal — whatever the job — Gradall handles it simply and speedily. And it practically eliminates costly hand labor.

But be your own judge. Call the Gradall Distributor nearest you to arrange a field demonstration!

There's a Gradall Distributor near you!

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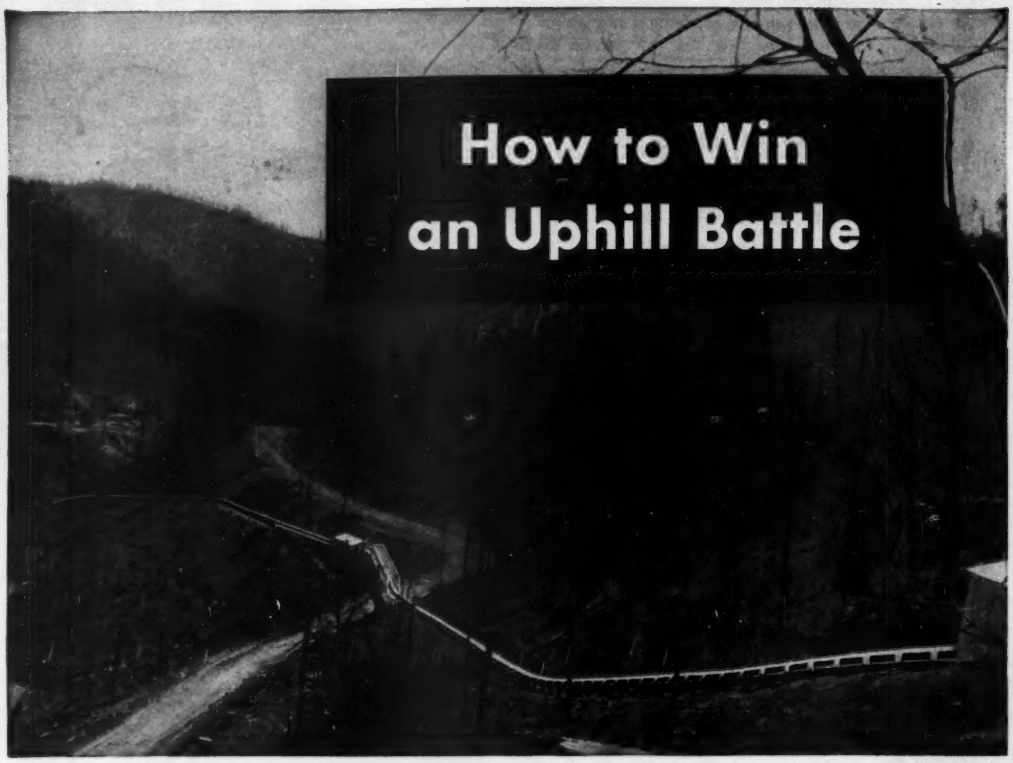
Gradall
DIVISION OF
WARNER & SWASEY
Cleveland

GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE



The tougher the terrain, the more you need a belt conveyor

Take another look at that picture. It contains a story—and a moral.

The story is one with which you are all too familiar. Just where they want you to build a dam or handle some other large-size construction job, nature has fouled-up the terrain. It's full of hills and valleys, reached by tortuous roads—if any exist; if not, you have to *build* them.

Building roads to transport fill, aggregates and other bulk materials is so unnecessary. There's another way—a better way. Use a Belt Conveyor System . . . a Hewitt-Robins Belt Conveyor System.

Let's take the case illustrated as an example. Over that existing serpentine road, those materials would have to travel many miles and negotiate two mountains in the process. But, when conveyed on 36" Hewitt-Robins Belt Conveyors, the distance becomes only half a mile, the climb less than 500 feet. And 1050 tons per hour of bulk material can be handled on a *continuous* basis—any given piece taking *less than 6 minutes* to complete the journey. The Conveyors in the picture tunnel under some highways, bridge others and jump across a ravine.

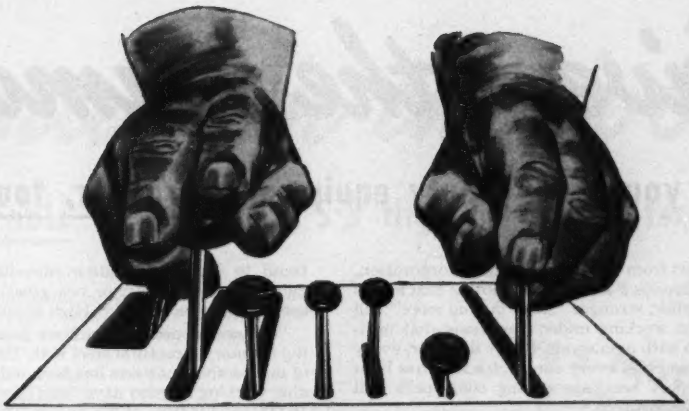
That's the story—now to the moral. Next time you have a construction job—on a straightaway or over troublesome terrain—ask Hewitt-Robins for recommendations on conveyorizing your bulk materials. You will be coming to a source of authority. The rubber-covered Belt and the trough-shaped Idler (the bases of the Belt Conveyor) were both originated by Hewitt-Robins. So who could know more about them? Furthermore, no other company in the world manufactures both machinery *and belt*, so we . . . alone . . . are able *and willing* to assume undivided responsibility.

For a cost-analysis that will show you how to save time, trouble and money, send details—including topographic maps—to Contractor Service Dept., Hewitt-Robins Incorporated, Passaic, N. J.

HEWITT-ROBINS
BELT CONVEYORS

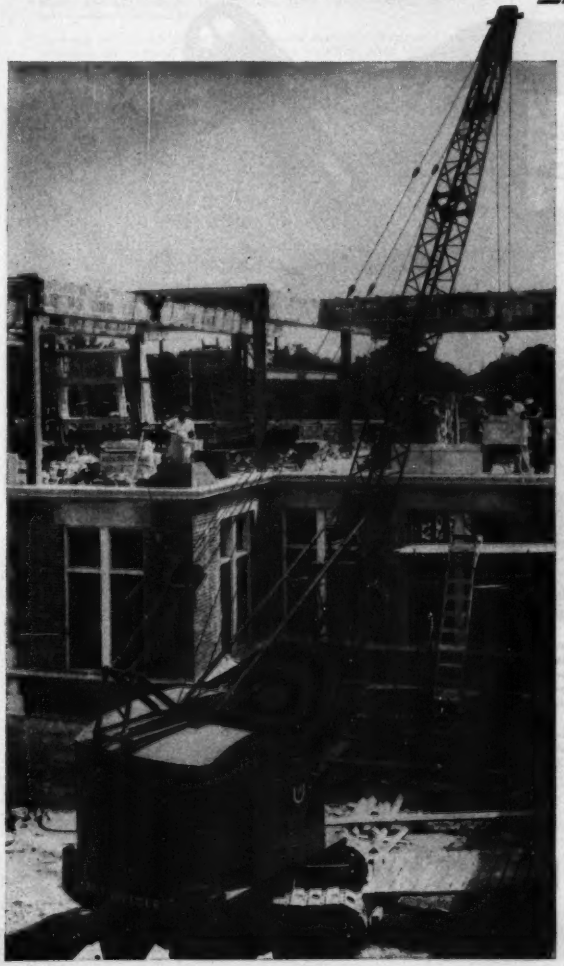
HEWITT-ROBINS HR **INCORPORATED**

BELT CONVEYORS (*belting and machinery*) • BELT AND BUCKET ELEVATORS • CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS • FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS • RUBBERLOKT ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS • TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS



At your fingertips... up to 25% increased output with

SMOOTHER, EFFORTLESS *Speed-o-Matic* CONTROLS



Fingers instead of muscles do the work with Link-Belt Speeder's exclusive Speed-o-Matic* controls! Every move of Shovel-Crane is faster, more accurate, easier. You get "pin point" placement of bucket, shovel or hoe. No drag or lag, jerk or jump. You "feel the load" every inch of the way—smoothly, surely, safely.

As for your operator, what a difference this control makes! He's fresh and fit, even during long overtime. And he lifts, loads and swings with a tireless precision that pays off in greater output, more profits for you.

Only Link-Belt Speeders offer you the unequalled advantages of Speed-o-Matic *full* hydraulic controls. Look to Link-Belt Speeder for more work, more kinds of work, more of the time.

* On 51, 300 and 500 series.

LINK-BELT SPEEDER

LS-51 handles wide variety of difficult work.

So versatile is this machine that it has had no idle time since installation on large Midwest construction project. Besides erecting steel, pouring concrete, distributing steel joists, hoisting lumber, etc., it also set concrete lintels and panels to line and level. Such work calls for extreme accuracy. Speed-o-Matic controls and 2-way powered rapid boom hoist made the job easy, even with 50 ft. boom.

LINK-BELT SPEEDER CORPORATION

Builders of the most complete line of shovels, cranes and draglines

12,579 CEDAR RAPIDS, IOWA

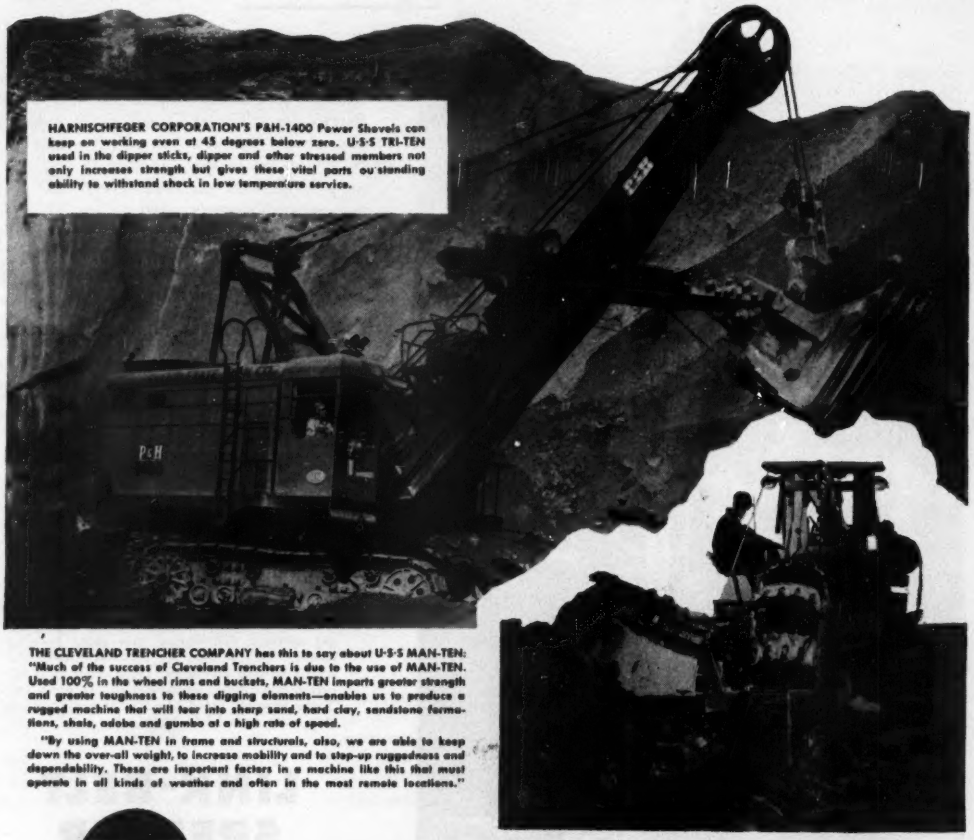
Give it the stamina

Build your heavy-duty equipment stronger, tougher and

Here's a report from the Harnischfeger Corporation, makers of the famous P&H Power Shovels that shows how these tougher, stronger *"steels that do more"* will keep equipment working under conditions that ordinarily play hob with operations. Every designer, every materials engineer and every contractor who has been plagued with part breakage during cold spells will appreciate its importance.

Says Harnischfeger: "We have used U·S·S TRI-TEN principally in our power shovel products. The continual trend to increased loading capacities together with more severe field service has greatly accelerated the use of this type of U·S·S High Strength Steel.

"Generally speaking, we have found that by replacing ordinary structural steel with TRI-TEN, the weight of our component parts has been reduced 25%. Allowable working stresses have been increased 50%—from 16,000 to 24,000 psi. What's more, TRI-TEN has enabled our P&H-1400 power shovel customers to operate this equipment in temperatures as low as minus 45° F."



HARNISCHFEGER CORPORATION'S P&H-1400 Power Shovels can keep on working even at 45 degrees below zero. U·S·S TRI-TEN used in the dipper sticks, dipper and other stressed members not only increases strength but gives these vital parts outstanding ability to withstand shock in low temperature service.

THE CLEVELAND TRENCHER COMPANY has this to say about U·S·S MAN-TEN: "Much of the success of Cleveland Trenchers is due to the use of MAN-TEN. Used 100% in the wheel rims and buckets, MAN-TEN imparts greater strength and greater toughness to these digging elements—enables us to produce a rugged machine that will tear into sharp sand, hard clay, sandstone formations, shale, adobe and gumbo at a high rate of speed.

"By using MAN-TEN in frame and structurals, also, we are able to keep down the over-all weight, to increase mobility and to step-up ruggedness and dependability. These are important factors in a machine like this that must operate in all kinds of weather and often in the most remote locations."

USS

U·S·S HIGH STRENGTH STEELS

UNITED STATES STEEL

to stay on the job...

more durable with these U·S·S High Strength Steels

Now—when equipment is being called upon to deliver the utmost in performance—*dependability* becomes of prime importance, so bear these facts in mind:

- **Whenever your design requires that the steel must have high yield point, high tensile strength, good corrosion resistance and ability to stand up at normal and sub-zero temperatures . . .**
- **When parts must possess a high strength-to-weight ratio, must resist abrasion and have high resistance to fatigue failure . . .**
- **When the steel must, in addition, lend itself readily to fabrication and machining . . .**
- **You can satisfy all these requirements, without adversely affecting the cost of your product, by building with U·S·S High Strength Steels.**

U·S·S TRI-TEN, U·S·S COR-TEN and U·S·S MAN-TEN are neither new nor untried. In literally hundreds of thousands of applications they have proved their ability to keep equipment on the job—to minimize down-time and maintenance costs—by increasing the strength, ruggedness and durability of parts subjected to unusual stresses or destructive conditions.

Our engineers and metallurgists have had 15 years' experience applying U·S·S High Strength Steels to all kinds of equipment. Let them show you how these tougher, stronger steels can be applied to your product to make it more efficient and dependable.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND
COLUMBIA STEEL COMPANY, SAN FRANCISCO
NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL COMPANY, PITTSBURGH
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S TRI-TEN

This manganese-nickel-copper steel has a yield point of 50,000 psi min. and a tensile strength of 70,000 psi min. in thicknesses ¼" and under, with moderately lower values as thickness increases to a maximum of 4". It has superior toughness and ability to withstand shock at sub-zero temperatures. It has greater resistance to abrasion than structural carbon steel (ASTM A7) and its fatigue resistance is 50% higher. U·S·S TRI-TEN'S resistance to atmospheric corrosion is slightly superior to copper steel.

Because U·S·S TRI-TEN has very good welding properties in intermediate and heavier thicknesses, this grade of U·S·S High Strength Steel is particularly recommended for application in heavy duty equipment where maximum ruggedness and strength with minimum weight are prime requisites. U·S·S TRI-TEN is produced in plates, structural shapes, bars and bar shapes.

U·S·S COR-TEN

U·S·S COR-TEN is a ductile, low-carbon chromium-nickel-silicon-copper-phosphorus steel having a yield point of 50,000 psi min., and a tensile strength of 70,000 psi min. in thicknesses ½" and under.

Its resistance to abrasion and shock is superior to structural carbon steel; its fatigue resistance—that is, its ability to withstand repeated stresses—is 50% greater.

What particularly distinguishes U·S·S COR-TEN is its unusually high resistance to atmospheric corrosion—4 to 6 times that of plain steel, 2 to 3 times that of copper steel. This property helps to assure the long life and low maintenance cost of any equipment in which COR-TEN is used, whether to obtain greater durability or to reduce weight.

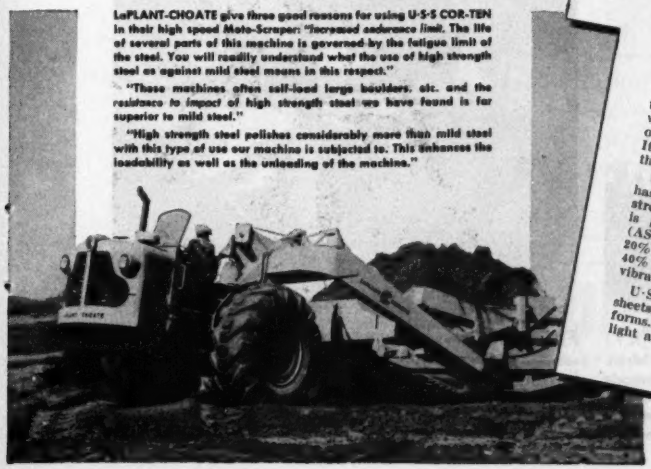
U·S·S COR-TEN is produced in all standard products—plates, shapes, bars, sheets, strip, special cold formed sections, wire and tubular products. Recommended particularly in light and intermediate thicknesses.

U·S·S MAN-TEN

U·S·S MAN-TEN is a grade of manganese-copper steel that, at relatively low cost, provides toughness, workability and weldability in a higher degree than obtainable in carbon steel of the same strength level. Its atmospheric corrosion resistance is slightly higher than that of copper steel.

U·S·S MAN-TEN, in thicknesses up to ¼" inclusive, has a yield point of 50,000 psi min. and tensile strength of 75,000 psi min. Its abrasion resistance is greater than that of structural carbon steel (ASTM A7); its resistance to sudden shock is about 20% greater; its fatigue strength is approximately 40% higher, insuring greater ability to withstand vibration and reversal of stresses.

U·S·S MAN-TEN is produced in plates, shapes, bars, sheets, strip, special cold-formed sections and other forms. It is particularly recommended for use in light and intermediate thicknesses.



LaPLANT-CHOATE give three good reasons for using U·S·S COR-TEN in their high speed Mote-Scraper: "Increased endurance limit. The life of several parts of this machine is governed by the fatigue limit of the steel. You will readily understand what the use of high strength steel as against mild steel means in this respect."

"Those machines often self-load large boulders, etc. and the resistance to impact of high strength steel we have found is far superior to mild steel."

"High strength steel polishes considerably more than mild steel with this type of use our machine is subjected to. This enhances the loadability as well as the unloading of the machine."

Construction News in Pictures . . .

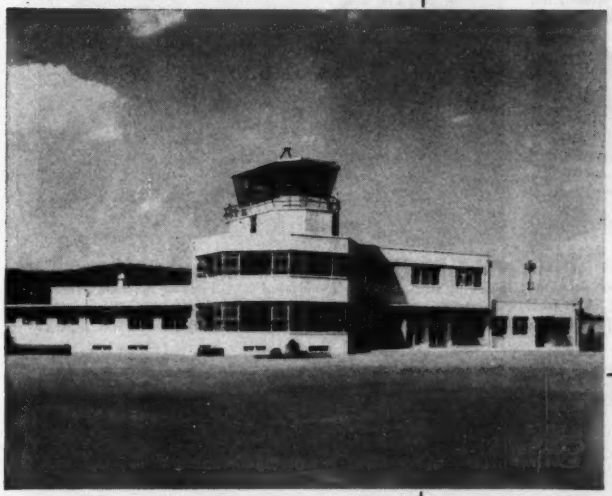
FLOATED—Big span for new highway is floated to place over Little Calumet River in Chicago. One of two identical parallel spans, it is 420 ft long, weighs 700 tons as floated, and carries a 40-ft roadway plus sidewalk. Clearance is 104 ft from bottom of truss chords to water. American Bridge Co. erected span on two 175-ft barges that were moored along bank in foreground, and which are maneuvered into placing position by seven cables running to winches on shore upstream and down. Steel was erected by stiffleg derrick with 105-ft boom and 25-ft jib, mounted on top of 60-ft tower (lower left). C. W. Whiteley is American Bridge's construction superintendent on job; David Johnson is resident engineer for Illinois Highway Dept. —Acme Photo

SUNK—Heavy effluent chamber for new Nassau County (N.Y.) sewage plant is sunk to bottom of Reynolds Channel, on Long Island, where it will rest on piles. Weighing 200 tons, reinforced concrete 13½x15-ft box is 29 ft high, with walls 2 ft thick. Merritt-Chapman & Scott Corp., New York, is contractor for job, which also includes 12,600 ft of 84-in. outfall sewer. James Denton is project manager, William Moulton is superintendent.

FLOODED—St. Louis' Frazier-Davis Construction Co. had just completed, except for grouting, this 10-ft dia tunnel at Grahamsville for New York City's water supply. Then, flood waters deposited 3-ft layer of muck all along 1,500-ft bore. As tunnelling equipment had been shifted to other work, debris removal is back-breaking job of hand-loading Ford pick-up trucks that must back up all the way from one portal.—Jerry Castro Photo *(Continued on page 40)*

Better for structural work

The greater plasticity of Duraplastic concrete mixes aids proper placement and results in improved surface appearance. An air-entraining portland cement, Duraplastic requires less water for a given slump. It has proved advantageous for all types of structural concrete.



Makes more durable concrete

Because water gain and segregation are minimized by Duraplastic's air-entraining feature, the resulting concrete is fortified against the effects of freezing-thawing weather. (Left, Administration Building, McLaughlin Field, Hot Springs, Ark. Architects: Erhart, Eichenbaum and Rauch, Little Rock; contractors, Peterson & McFadyen, Little Rock.)

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS®

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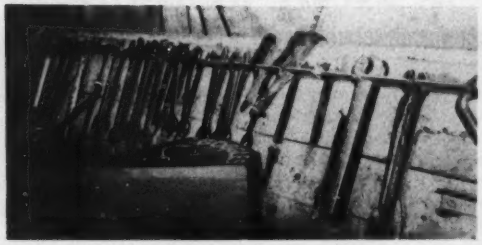
A UNIVERSAL ATLAS PRODUCT

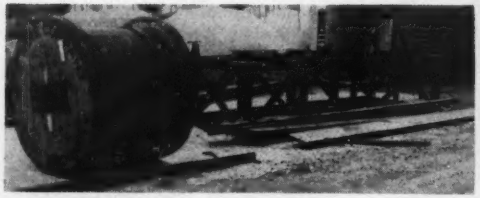
CM-D-117

Makes Better Concrete at No Extra Cost

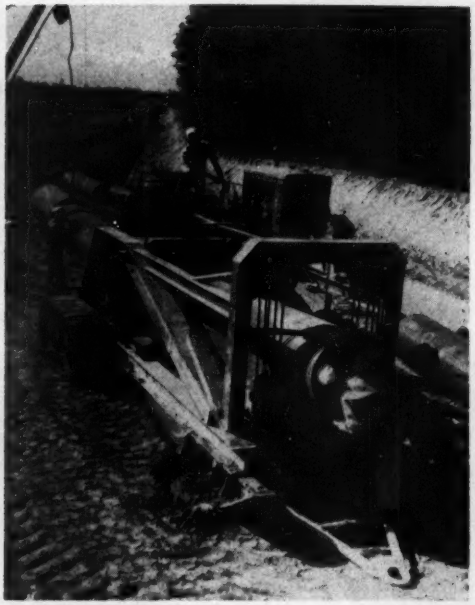
"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*



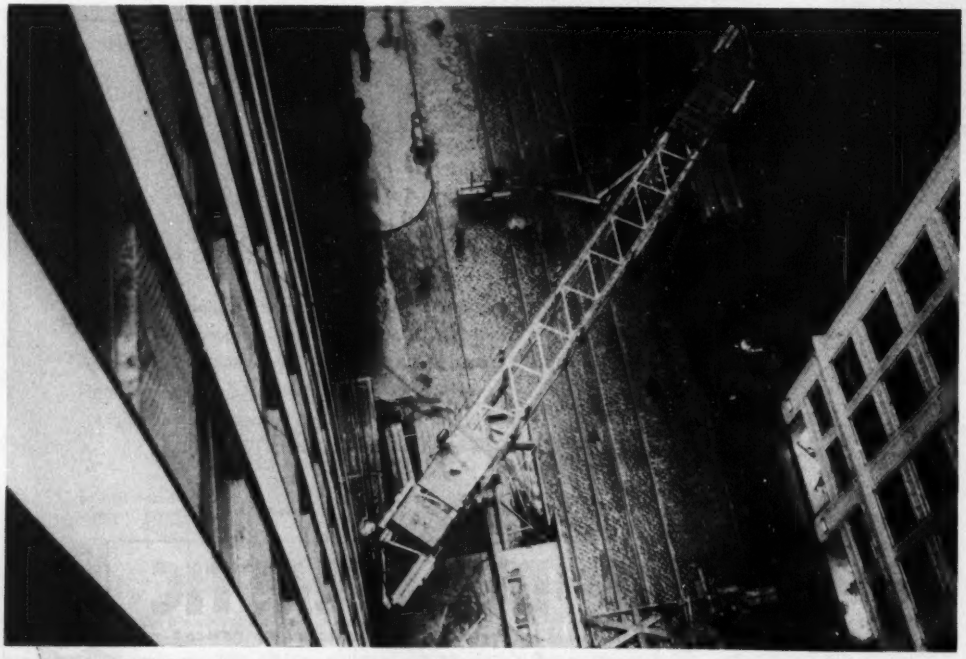
TOOL HOLDER—Notched strip of 2x2-in. angle iron fastened to timber backboard keeps hand tools from getting lost, while painted outlines show where tools are to be placed and quickly tell which ones are missing.—From Elton Sterrett, Houston



REEL HOLDER—Endless cable lines on 1,700-ft cableway at Philpott Dam in Virginia are changed by Bates & Rogers-Morrison-Kiewit with aid of this reel carrier (shown empty here). Axle with one large-diameter end is inserted in reel to carry the spool and to permit braking to control speed of unwinding.



PIPE BENDER—Accurate bends in pipe for gas line are made by skid- and crawler-mounted CRC bending machine powered by International gasoline engine. It makes short bends without crimping, with accuracy of ½ of 1 deg. Here, rig bends 30-in. pipe on Bechtel Corp.'s section of Texas-Illinois line in Arkansas.



ACCESS BRIDGE—American Bridge Co. raises 100-ft truss to span Pittsburgh street so 1,200 rooms of furniture and equipment can be moved between buildings on U. S. Steel Co. office switch without interrupting traffic. Structure is hoisted by takeoff winches on two D4 tractors braced by timbers in the street, with lines running through blocks above.—Wide World Photo

(Continued on page 42)

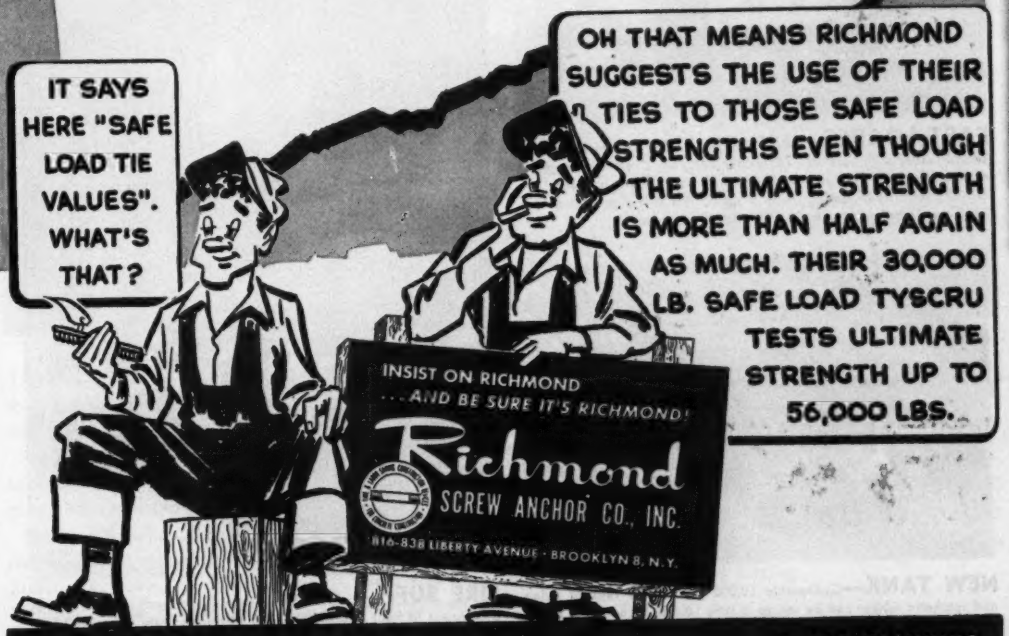
ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

IMPARTIAL TESTS PROVE STRENGTH OF RICHMOND TYSCRUS

Richmond pioneers again . . . sponsoring official tests to verify the rated safe loads of its Form-tying Products. In every one of 181 tests conducted by Charles E. Schaffner* at Brooklyn Polytechnic Institute, the results indicate a huge margin of safety, with ultimate strength far beyond the published safe load.

TYSCRU SIZE	PUBLISHED SAFE LOAD	REPORT OF ULTIMATE LOAD Test No. 1	Test No. 2
½" Dia.	6000	9,490 lbs.	10,590 lbs.
¾" Dia.	12000	19,720 lbs.	20,570 lbs.
1" Dia. 2 Strut	18000	27,580 lbs.	27,820 lbs.
1" Dia. 4 Strut	24000	37,930 lbs.	36,890 lbs.
1¼" Dia. 4 Strut	30000	55,270 lbs.	56,790 lbs.

*Assistant Professor of Civil Engineering


IT SAYS HERE "SAFE LOAD TIE VALUES". WHAT'S THAT?
OH THAT MEANS RICHMOND SUGGESTS THE USE OF THEIR TIES TO THOSE SAFE LOAD STRENGTHS EVEN THOUGH THE ULTIMATE STRENGTH IS MORE THAN HALF AGAIN AS MUCH. THEIR 30,000 LB. SAFE LOAD TYSCRU TESTS ULTIMATE STRENGTH UP TO 56,000 LBS.
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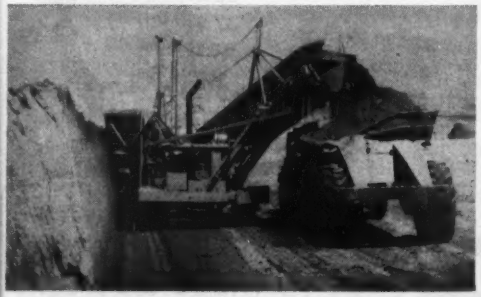
RICHMOND KNOW-HOW—DEPENDABILITY—SERVICE—ESTIMATES & JOB PLANNING

GOOD SAMARITAN—Contractor drove by right after tank on semi-trailer fouled Washington (D.C.) beam bridge, collapsing span and pinning driver in cab. Rushing to his job near by, contractor ordered his Quick-Way truck-crane to accident site, took its controls himself and, with rig's boom straight up and front wheels 2 ft off ground, lifted girder to free driver and save his life. Any slip or misjudgment would have resulted in fatality, but modest hero prefers to remain anonymous.—L. C. Cook Photo



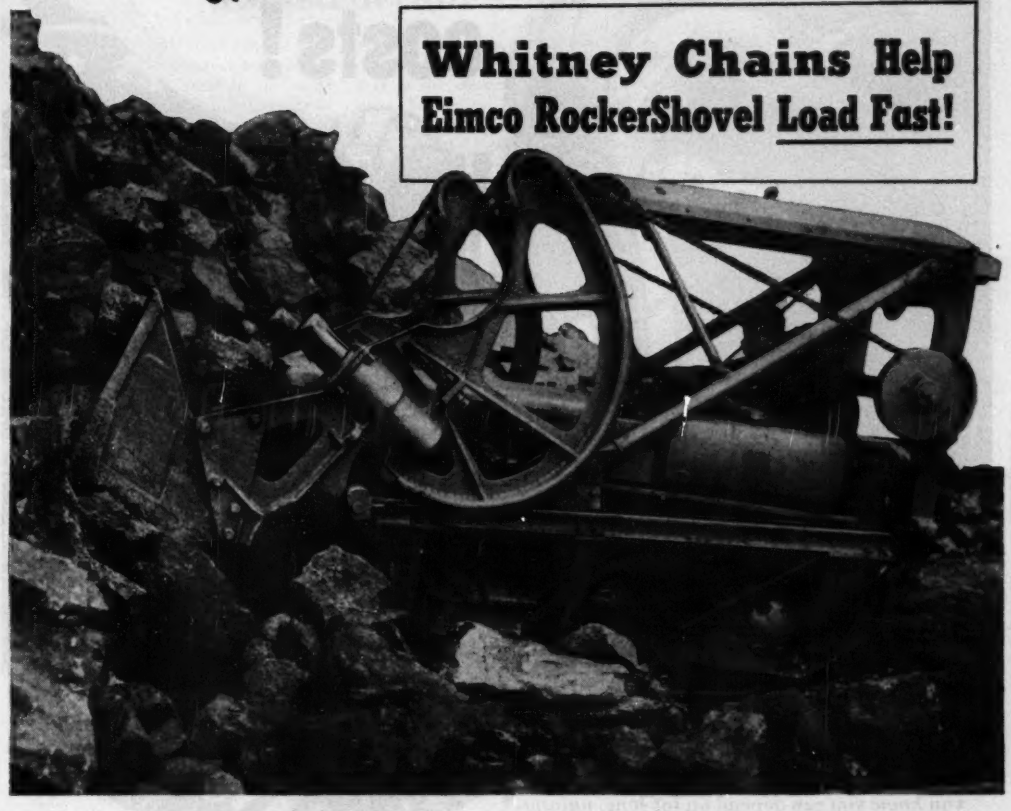
FAST LOADER— At Bonny Dam, Utah Construction Co.'s Euclid loader with vertical 12-ft cutter bar puts 30 yd into wagon in 45 sec. Wagon's right side has been built up to lessen spillage. Two HD-19 tractors pull loader, which mixes borrow as it digs. In February, 1950, we described similar rig at Harlan County Dam.

NEW TANK—Collapsible 10,000-gal storage tank of nylon and synthetic rubber can be set up in only 10 min by unrolling it like a rug from its protective shipping box and making single inlet-outlet connection. Engineer Lab at Ft. Belvoir developed it for gas and oil storage; Goodyear made it.—U. S. Army Photo

FIRE BUFF—Lorain Moto-Crane is pressed into service as hose tower to fight $5,000,000 fire in Michigan State Office Building, Lansing, which burned 2 days. Hose runs up rig's boom, and nozzle is fixed to tip of jib to reach upper floors of 7-story structure. Reniger Construction Co. owns this novel fire-fighter.

Brutes for Work and Dependability

Whitney Chains Help Eimco RockerShovel Load Fast!



The Eimco "104" RockerShovel requires only 10 to 15 seconds to complete its loading cycle.

From digging position through loading, discharge and back to digging, that's speed in any language.

Because dependability is a must in the tough earth-moving field, Eimco engineers specify and use Whitney Cable Chains for transmitting power to the bucket. They know from experience that they can depend on Whitney Chains to give long operating life with minimum maintenance, under the tough conditions encountered . . . know that Whitney keeps equipment working day in, day out.

From the complete line of Roller, Silent and Conveyor chains, Whitney engineers can recommend, without bias, the proper type of drive for your application . . . the chain drive which will give you the best service at lowest cost.

Consult your local Whitney Field Office or Distributor or write direct to us for complete information and catalog.

Whitney Chain Company

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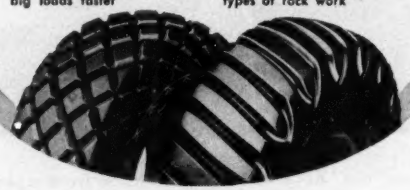
Count on this tire to cut costs!

Two more reasons why It Pays to BUY and SPECIFY GOODYEAR!

ALL-WEATHER
Finest for flotation, rolling big loads faster

HARD ROCK LUG
Super-tough champ for all types of rock work



OPERATING costs go d-o-w-n when you use the Goodyear Sure-Grip, the tire you *know* you can depend on for long, *uninterrupted, economical* service.

Sure-Grip is First Choice with cost-conscious construction men because its specially engineered O-P-E-N C-E-N-T-E-R tread and extra-massive, balanced lug bars make it tops for drive-wheel traction—tops in terms of low cost per cubic yard, low cost per operating hour — *over-all low cost that makes your equipment earn more for you!*

GOODYEAR

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

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Volume 33
Number 4

CONSTRUCTION
METHODS AND EQUIPMENT

APRIL
1951

Harold W. Richardson, Editor

Construction Under Controls

IN COMMON with other basic American industries construction will operate under government controls for some time to come. Distasteful as controls may be to our normal way of life, we must live and work under them to accomplish the mobilization job the nation has set out to do. At best construction, with all its vast ramifications, is a hectic, complex, disjointed and difficult business. Under controls it becomes even more complex and hectic. Yet, because it is a vital industry in the mobilization plan, construction somehow must and will carry on.

Right now the control program is in the state of inevitable confusion of planning, organization and testing. Yet, order some day will come out of the present chaos. Just how soon depends in part on how long it takes American business and the public to accept a regimented economy and learn to live and work under it. Controls, of course, pinch and cause discomfort, but screaming every time we are pinched won't help the situation. Nor will trying to keep politics as usual, business as usual and our personal comforts as usual. This big serious job of mobilization comes first.

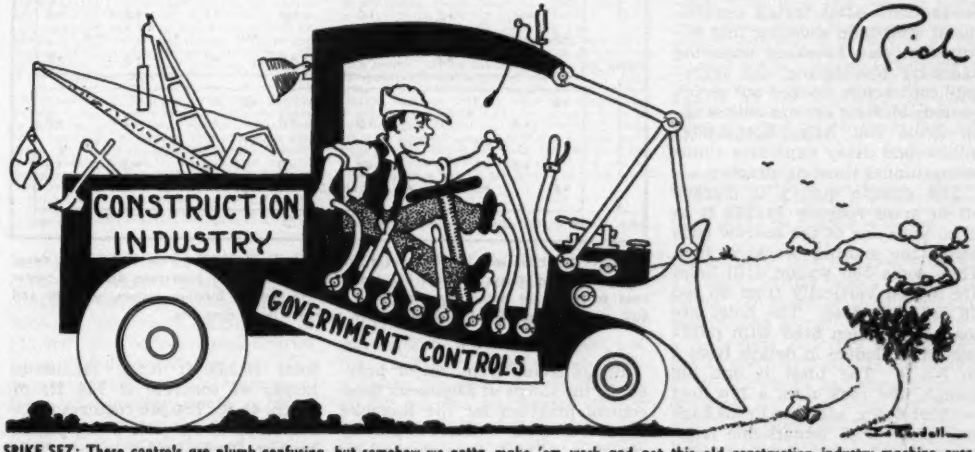
Construction faces controls on all sides. Few have been fully worked out; some are being tested; still others are only in the contemplated or planning stage. No one can say at this time the extent of controls necessary to do the job nor can we foresee their full impact upon our industry.

We do know, however, that there will be controls on the types of construction that can be undertaken at this time, for there have been increasing curtailments on new projects since last October. We know we face control and allocation of materials; not only those going into the structure itself, but also on those required for construction equipment and contractor supplies. Mild priorities are already here; they might be stiffened later. We face price controls on the products and machines we buy for our operations. Right now we are in the throes of trying to set up some kind of workable wage controls. And perhaps we shall be forced into a manpower allocation of some kind.

At the recent Associated General Contractors convention in Boston three speakers—two of them NPA officials—explained the control situation as best they could at that time to a bewildered audience of contractors. Ralph Stiles, past-president of Construction Industry Manufacturers Association, assured the contractors they would continue to get a substantial amount of new equipment, but that the equipment picture would be confused until the Controlled Materials Plan, now scheduled for July, goes into effect. CIMA is already cooperating with NPA by gathering information on material requirements of the manufacturers and has set up an industry advisory committee.

Frank R. Creedon and John Haynes of the construction divisions of NPA told the AGC meeting the reason for controls and how they were being worked out. Construction curtailments are solely of some steel and other critical materials. Creedon hopes that "when all the additional steel capacity now under way comes in we can discontinue entirely the construction controls." Haynes pleaded for engineering and architectural designs economical in use of critical materials and for greater use of substitute materials as means of lessening the needs for more stringent controls.

The construction industry has the intelligence, perseverance, ingenuity and guts to meet all the troubles that lie ahead. Controls are here. We must learn to live with them.



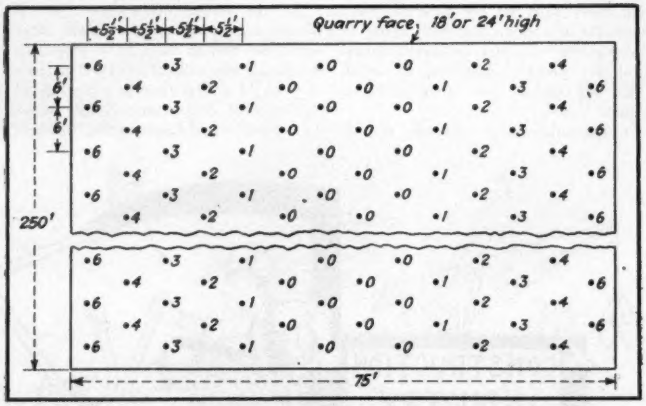
SPIKE SEZ: These controls are plumb confusing, but somehow we gotta make 'em work and get this old construction industry machine over that rough road ahead of us.

Shovel loads from freshly shot lift after ...

Millisecond Delays Tame Buggs Island Quarry

DOWN ON THE North Carolina border in southern Virginia where the Corps of Engineers is throwing massive Buggs Island Dam across the Roanoke River, a new technique in quarrying has been developed by Ralph Mills and Gorman Bros. Co., contractors for aggregate production. After trying conventional well-hole shooting that resulted in poor breakage requiring excessive blockholing, the aggregate contractors worked out an ingenious blasting system with wagon drills and Atlas Rockmaster millisecond delay exploders simulating tunnel shooting practice.

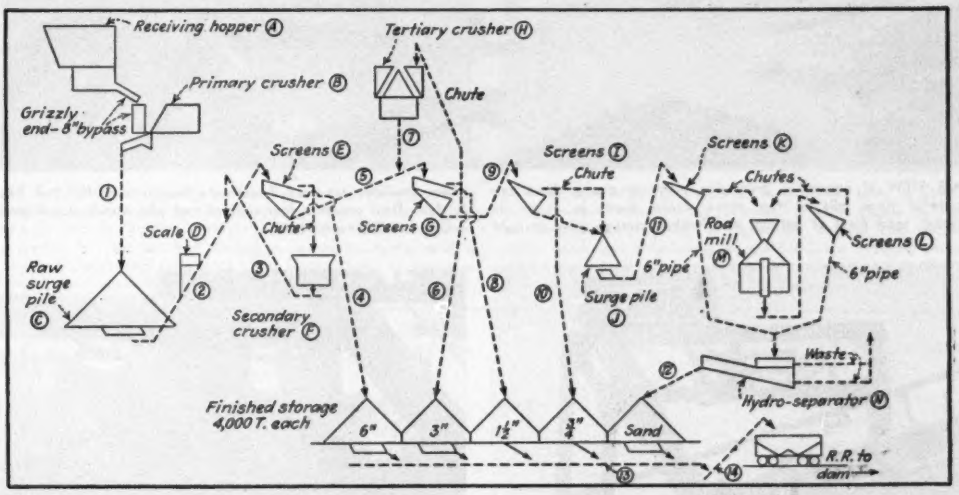
The granite quarry is marked off in areas roughly 75x250 ft in plan, with one of the narrow ends being the normal working face. Then some 500 wagon drill holes are drilled vertically from on top 18 or 24 ft deep. The holes are loaded and then fired with millisecond exploders in delays from 0 to No. 6. The blast is one big oomph, the rock rises a few feet without flying, and then drops back into place with remarkable fragmentation that calls for practically no secondary shooting.



QUARRY IS SHOT with 500 holes at a time in blocks 75x250 ft., from 18 to 24 ft. deep, with millisecond delays laid out like tunnel blasting diagram from zero delays in center rows to No. 6 at outer rows. Numbers refer to delays. Blasting system, with 40 and 60% powder, yields 3.3 tons finely broken rock per lb of dynamite.

Buggs Island Dam, major project in the Corps of Engineers flood control program for the Roanoke River Valley, is a concrete gravity structure 2,785 ft long, flanked by an earth wing and saddle dikes that total 19,250 ft long. Maximum height of concrete is 144 ft; of earth, 45 ft. The job requires 650,000 cu yd of concrete being placed by two Clyde gantry cranes from a trestle. A 1,092-ft overflow spill-

WAGON DRILLS put down another round of holes at Buggs Island Dam quarry where tunnel sequence delay blasting is resulting in remarkable fragmentation with low powder consumption.



Buggs Island Dam Sand and Stone Are Processed at Quarry-Site Plant

Primary Crushing and Storage: Quarry rock, dumped into receiving hopper (A) by Koehring Dumptors, passes through apron feeder over grizzly bypassing minus 8 in. around crusher. Oversize goes through 40x42-in. Ferrell-Bacon jaw-crusher (B) for reduction to 8 in.; all goes via 36-in. belt (1) to 16,000-ton surge pile (C).

First Screen Plant: From bottom of surge pile raw material is fed by plate feeder in concrete tunnel on to 36-in. belt (2) over Fairbanks-Morse conveyor scale (D) to Robins 5x14-ft. double-deck screen (E). Plus 6-in. material goes to Telsmith 16-in. gyratory crusher (F) for reduction to 3 in., thence back to main belt (2) over 24-in. belt (3). From screen (E) 3- to 6-in. size can be sent direct to finished 6-in. cobble storage by 24-in. belt (4), or can be chuted back to crusher (F) for more reduction.

Second Screen Plant: Minus 3-in. from screen (E) goes by 36-in. belt (5) to two Telsmith 4x12ft double-deck screens (G). Here the 1½- to 3-in. size can go direct to finished stockpile over 18-in. belt (6) or can be chuted to Telsmith 4-ft tertiary cone crusher (H) for futher reduction, the crusher run being returned to screens via belt (7). From screen (G) the ¾- to 1½-in. size goes to finished storage via 18-in. belt (8), while the minus ¾-in. is sent by two 18-in. belts (9) to two Telsmith 5x12-ft single screens (I). Here everything under ⅜ in. is screened out and is chuted to sand plant surge pile (J). The ⅜- to ¾-in. size can go direct to finished stockpile via 18-in. belt (10); or can be chuted to surge pile (J) for storage for sand manufacture.

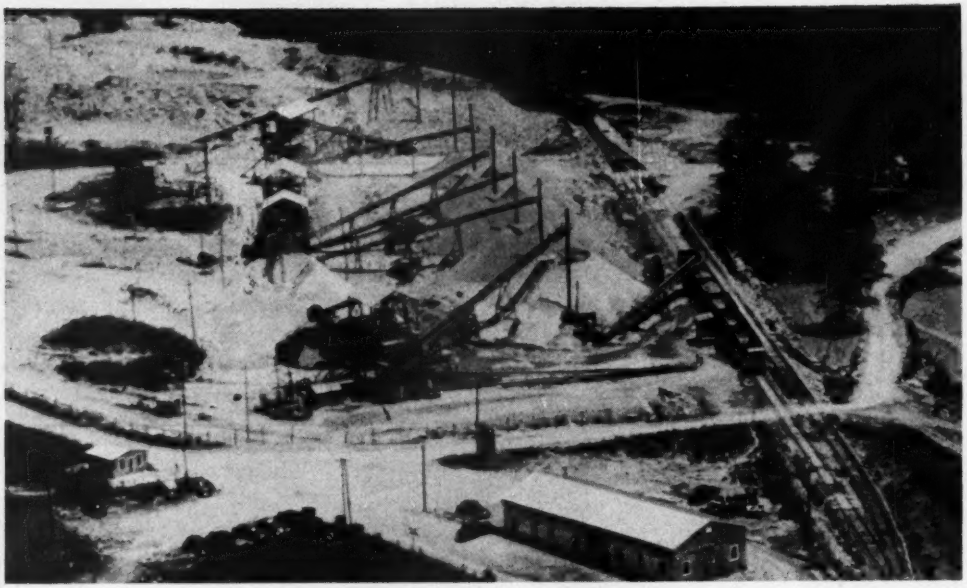
Sand Plant: From stockpile (J) the raw sand material is fed on to 24-in. belt (11) leading to two Tyler Hummer single wet screens (K), both fitted with No. 10 screen cloth. Retained material passes by chute to an 8x12ft Marcy rod mill (M) and thence by 6-in. pipe to a No. 4 screen (L), and larger than No. 4 size goes back through the rod mill. Minus No. 10 size passing both screens (K) and (L) goes by 6-in. pipes to Dorr Hydro-Separator (N) with a 16-ft bowl and 8x34-ft rake compartment. Fines under No. 100 are wasted; the rest of the sand goes by 18-in. belt (12) to finished storage.

Loading Out: A 30-in. belt (13) in a steel-lined tunnel running under all four finished stock piles transfers materials one size at a time to another inclined 30-in. belt (14) for loading into 50-ton hopper cars for the 2-mi haul to the dam.

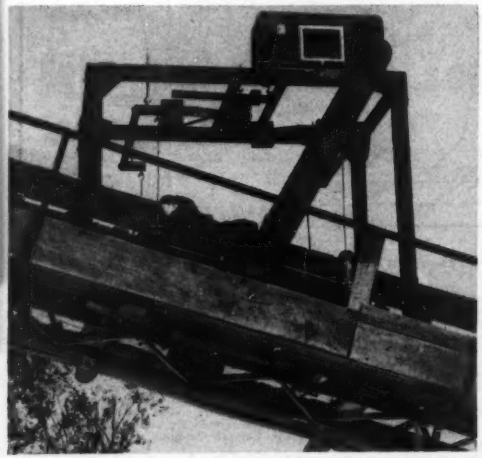
way is topped by 22 Tainter gates each 42 ft wide. Initial power installation will be nine turbines with a combined capacity of 172,000 hp. The combined firm of Jones-Tompkins-Wright has the general contract for the main dam. Donovan-Lovering-Boyle holds a separate contract for the powerhouse and installation of equipment.

The aggregate plant that processes manufactured sand and four sizes of stone, from No. 4 to 6 in., is divided into two parts. At the quarry, 2 mi north of the dam, are the crushers, screens, rod mills and wet classifiers for production of the various aggregates. From here the finished materials are hauled in hopper dump cars over a government-owned railroad to the damsite, where they are stored according to size over a reclaiming tunnel for transfer to the cooling and mixing plant.

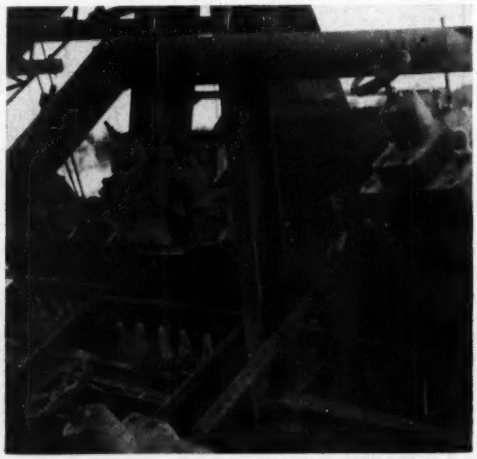
A typical shooting diagram — key to successful quarry operations — is shown in an accompanying drawing. Over an area 75x250 ft, about 500 holes are drilled downward with Cleveland wagon drills either 18 or 24 ft deep, depending



AIR VIEW of aggregate processing plant at quarry shows raw material surge pile at top, three screen plants in a row in center, sand plant at bottom, and finished storage piles at right where products are loaded out into hopper cars for 2-mi haul to dam. Plant produces four sizes of rock plus manufactured sand. —Corps of Engineers Photo.



TELLTALE OF QUARRY OPERATIONS is this Fairbanks-Morse scale built into main conveyor between primary crusher and raw aggregate surge pile.—Corps of Engineers Photo.



RINSING AND SIZING SCREENS prepare raw sand materials for processing through Marcy rod mill and Dorr wet classifiers.—Corps of Engineers Photo.

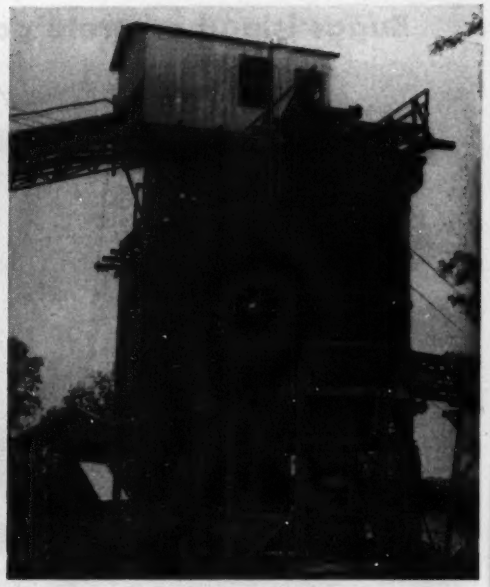
upon height of lift being worked. The holes are drilled with Rock Bit Sales & Service Co. carbide insert detachable bits, 2¼-in. starters, 2 in. for the final 6 ft. These bits average 300 ft of hole, but sometimes run up to 750 ft, before they require resharpening on the job by grinding.

The holes are loaded full with Atlas gelatin dynamite, 60% strength in the lower part, 40% in the upper part, with the exploder placed 4 ft above bottom. Holes are staggered as shown in the shooting diagram, and they are primed with delays ranging from zero delay for four rows down through the center, to 1, 2, 3, 4 and 6 delays outward from the center. This shooting arrangement is producing the healthy output of 3.3 tons of rock per lb of powder, plus excellent fragmentation.

Broken rock is loaded by a Bucyrus-Erie 54-B shovel into five Koehring Dumptors for a short haul to the primary crusher. The flow of material through the quarry-site processing plant is shown in the accompanying flow sheet and legend.

From the quarry plant the five

AT DAMSITE belt delivers processed sand and stone from car hoppers under tracks to shuttle conveyor over stockpile with lift of 155 ft. Tunnel conveyor under piles reclaims coarse materials for rescreen and cooling in inundation tanks; sand is bypassed direct from here to batching plant.—Corps of Engineers Photo (Also adjacent photo).



COARSE AGGREGATES are cooled in these four tanks by dunking in cold water. Materials are delivered to short shuttle conveyor over top of tanks by belt at upper left leading from rescreen plant. Sand, and occasionally all materials, are bypassed around coolers to belt at lower right. After cooling, stone is sent to dewatering screens over tunnel belt at lower left.

sizes of finished aggregates are hauled to the damsite in 50-ton hopper cars over a railroad built by the government. At the dam the cars are dumped into hoppers — one for sand, one for stone — both served by a long belt conveyor that carries the materials to a long shuttle belt for deposition into one of five contiguous storage piles over a reclaiming tunnel.

From here the products are drawn off as needed by the mixing plant, first through a rescreen plant, from whence the sand is bypassed direct to the batchers, while the rock goes through a cold-water dunking process in hot weather — or can be bypassed — thence goes to dewatering screens and on to the batching plant.

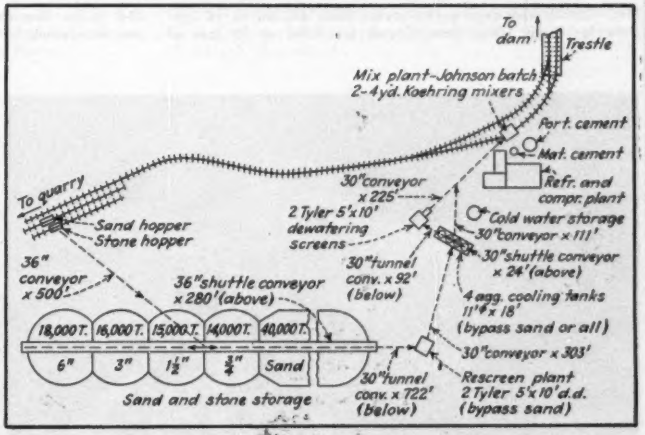
At the mixing plant, bulk portland cement is blended with natural cement roughly in the proportions of three to one, all ingredients are weighed out in a Johnson batching plant, and then mixed in two Koehring 4-yd. mixers.

The material handling at the dam is likewise shown in an accompanying flow sheet with appropriate legend.

The Roanoke River program is under the jurisdiction of the Norfolk District, U. S. Corps of Engineers, Col. W. F. Powers, District Engineer. Fred L. Geis, Jr., is resident engineer in charge at Buggs Island, assisted by C. M. Irvine.

For the aggregate contractors, Ralph E. Mills, Salem, Va., and Gorman Bros. Inc., Flemingsburg, Ky., R. W. McCall is general superintendent at the job.

For the general contractors, Jones-Tompkins-Wright, Arthur L. Pauls is project manager and Frank Hodges is general superintendent.

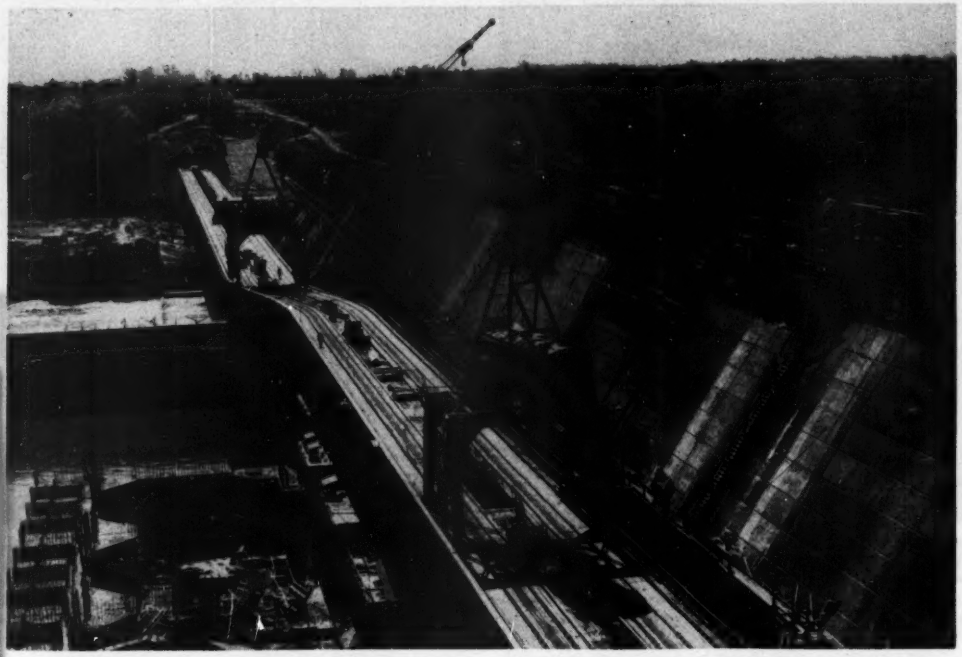


Flow Sheet of Aggregate Handling at Dam

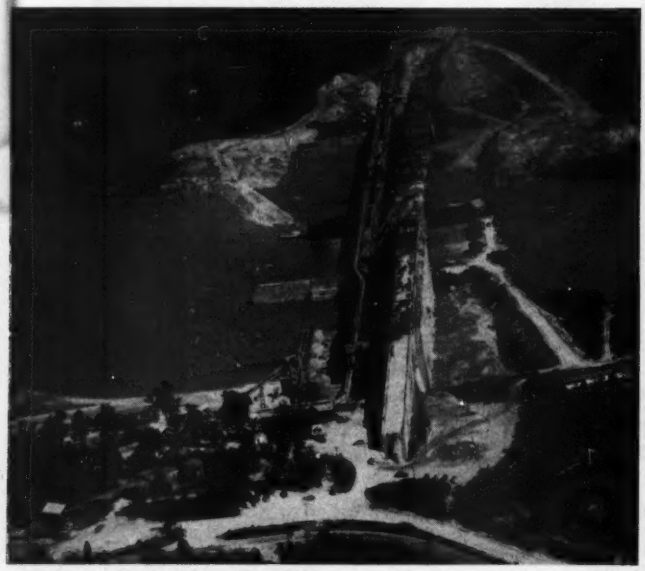
Rail hopper cars from quarry plant dump into sand and stone hoppers under tracks. Belt conveyor lifts materials 155 ft to shuttle conveyor over stockpiles. Belt in tunnel below draws off materials as needed, discharging into rescreen plant (sand is bypassed). Another conveyor takes aggregates to shuttle over top of four cooling inundation tanks (sand is bypassed around tanks, all stone may be bypassed also if desired). Cooled stone goes by tunnel conveyor to dewatering screens, and thence to mix plant. In extreme hot weather flake ice is added at mixer.

Following is a pictorial spread depicting concrete operations ⟶

Buggs Island concrete gantry-placed from trestle

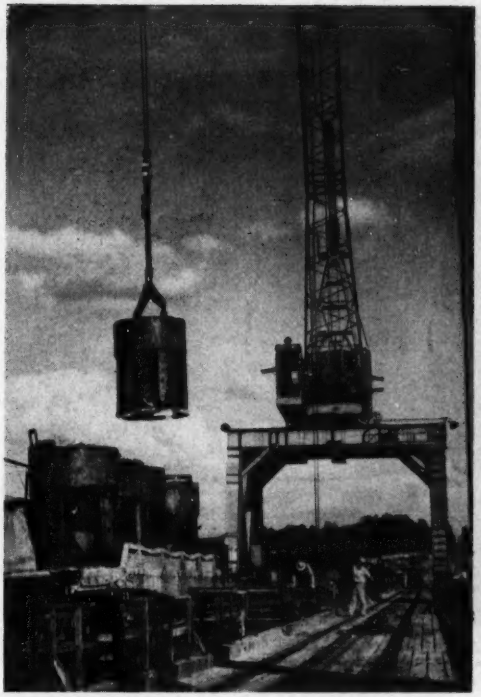


TWO CLYDE wide-gage gantry cranes place 650,000 cu yd concrete for Buggs Island Dam. Cranes are rated at 30 tons at 30-ft radius. They can boom out to top out dam at right and to pour foundations for powerhouse at left.—Corps of Engineers Photo

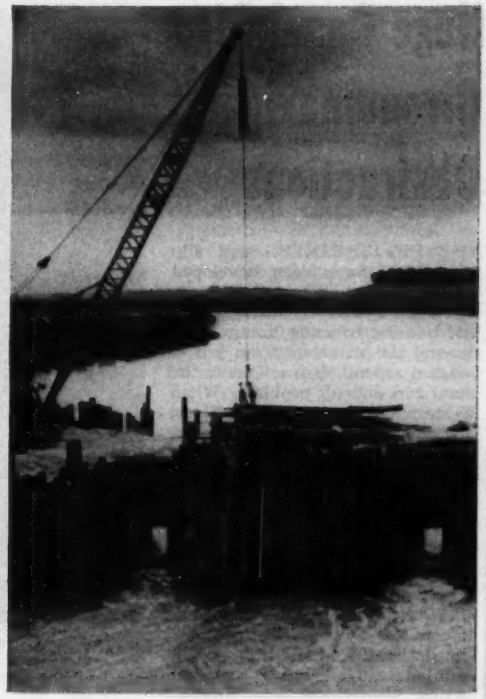


TRESTLE CARRYING two gantry cranes parallels long (2,785 ft) Buggs Island Dam across Roanoke River in southern Virginia. At lower left is tail end of dam aggregate handling plant, including re-screens, cooling tanks, dewatering screens and mixing plant. Final closure of river, at right center, was tougher than it looks here.—Corps of Engineers Photo

EXTRA-DRY CONCRETE is delivered to forms in 4-yd Johnson controllable-dump buckets inside of 5-ft lift cantilever forms.—Corps of Engineers Photo

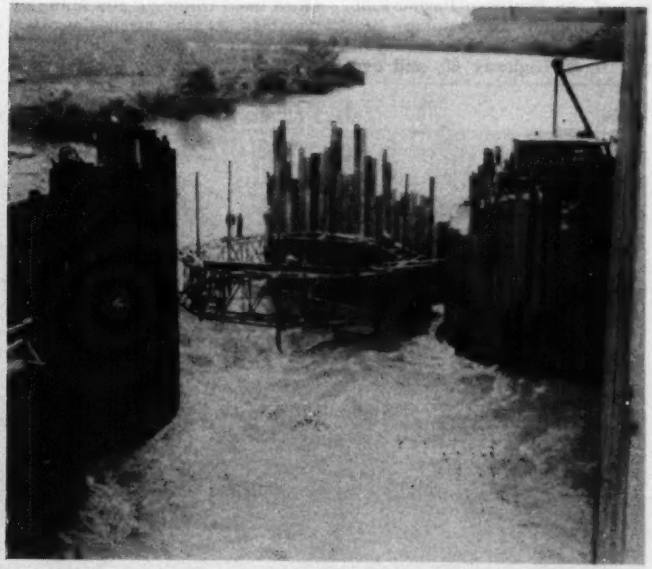


ONE OF TWO CLYDE GANTRIES picks a 4-yd bucket off of concrete delivery car for transfer to forms. Between pours cranes are busy with forms and steel.—Corps of Engineers Photo



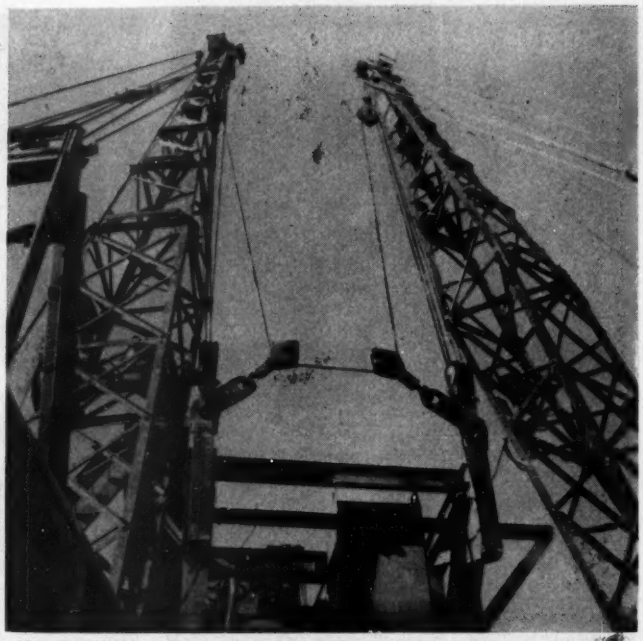
DURING FINAL CLOSURE of cellular cofferdam, diaphragms between cells were left high to form sluiceways that reduced pressure on last cell being driven.

TO COMPACT ½-in. slump concrete, Jackson electric vibrators have been stepped up through converters to give 5,000 vibrations per min. with 90-cycle current.—C. E. Photo.



FINAL CLOSURE is effected by driving cellular sheetpile cofferdam around sluiceway. Here templet has been set up for last cell in cofferdam. River won twice, then gave up and submitted to controlled diversion through slots. Cells were hard to hold because of shallow river bed over hard rock.

Huge Canal Rigs Circumnavigate Obstructions



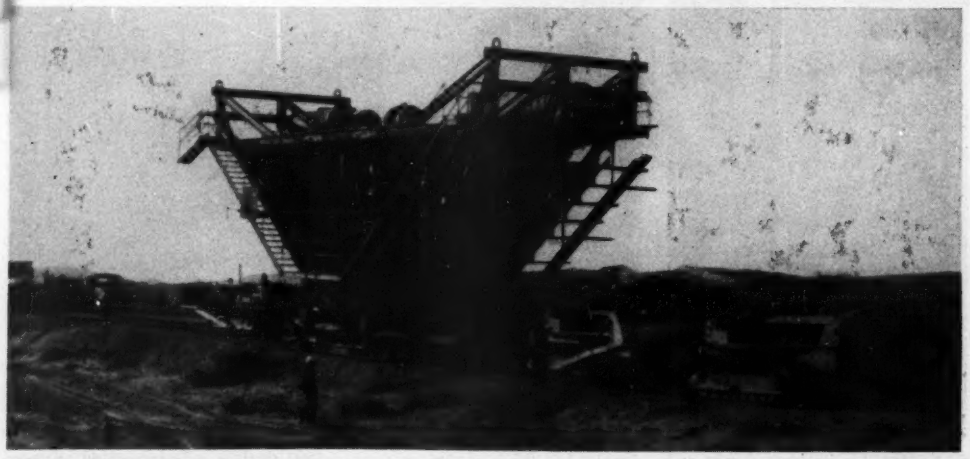
NOVEL RIGGING of two 5-part lines insures that cranes will act as a unit when lifting one end of heavy machine on Western Contracting Corp.'s Wellton-Mohawk Canal job. Two cranes lifting opposite end are similarly reeved. — All photos from R. H. Heitman

THE BIG TRIMMERS and slip forms that have been developed for construction of irrigation canals make short work of cutting slopes and pouring concrete linings. But moving the monsters from job to job and around obstructions in the canal is a difficult problem. When Western Contracting Corp., Sioux City, Iowa, was confronted with five such moves on the Bureau of Reclamation's Wellton - Mohawk Canal east of Yuma, Ariz., they worked out a novel solution. R. H. Heitman, Western's West Coast District Engineer in their Newman, Calif., office, describes the moving operation this way:

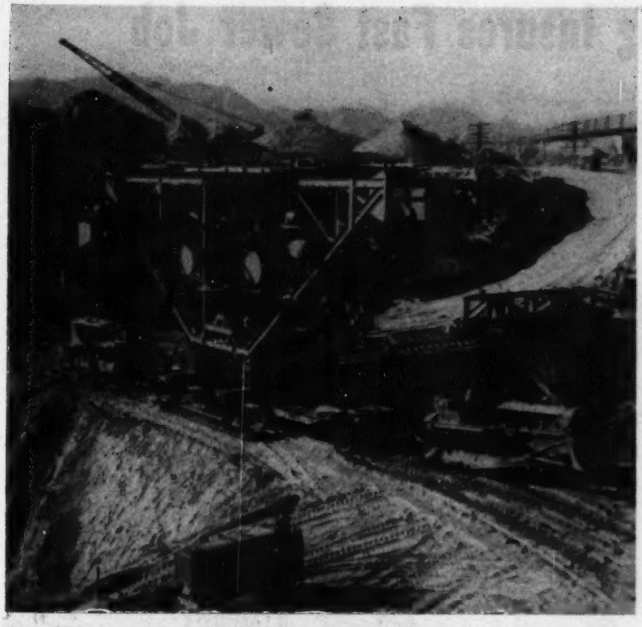
"We have under contract 30 mi. of concrete-lined irrigation canal, and the trimming and lining of an additional 10 mi. on an adjacent section, which we have subcontracted from Morrison-Knudsen Co. In this length of canal, it is necessary to move the equipment around a tunnel under the main line of the Southern Pacific Railroad, around two pump lifts, around a pipe siphon under the SP and U. S. Highway 80, and over a concrete structure built ahead of the lining operations.

"It was desired to eliminate as much hand trimming and lining as possible. At the same time, we wanted to get away from the expensive compacted backfill required when banks are cut and the equipment hauled out from the canal's bottom level — the way most similar moves have been made on other projects.

"Therefore, with the machines, we trimmed and lined as close up



CANAL LINER is moved around obstruction in ditch. Two Cat D8 tractors haul pair of trailers that carry slip form, while third D8 steers rear trailer and holds unit back while going down grades, which are limited to 8%. Note heavy brackets and beams distributing machine's load to trailer, and longitudinal runner outriggers that prevent top-heavy rig from tipping during the move.



CANAL TRIMMER waits on earth plug thrown across ditch, after being moved around railroad tunnel. Four cranes will now lift it from carrying trailers and place it in canal. One of rig's end frames, removed to cut weight, has been replaced on tracks at right.

to the structure as possible. We placed a dirt plug in the structure transition section on which to park trailers for hauling the equipment, lifted out the machines, walked the lifting cranes forward to the ends of the plug and landed the machines on the waiting hauling rigs.

"The lift was made by two Northwest 95 cranes on one end, and a Marion 111M and a Bucyrus-Erie 51B crane on the other. Lifting was through a five-part line on each crane, and the two rigs at each end were reeved together. Cable was reeled in by only one of the pair at a time. To enable the cranes to walk after the machine was out of the ditch, the lift was made with booms at right angles to the tracks. The procedure was complicated by the extreme weight of the canal units, which had been specially designed by Western Contracting Corp. for rigidity and to use oversize components from earlier machines. The end frames, engines and generators were removed to cut the weight down to about 120 tons.

"Hauling was done on two 45-ton trailers, placed back-to-back so the assembly could be steered from each end, with the greater part of the load carried over sixteen 8.25x14 tires on the rear of each trailer. Very heavy shoe brackets were built to take the machine's trusses and transmit their loads down to transverse trailer bearing beams in order that these beams would clear all of the machinery below the truss bottom chords. The machine is quite top heavy. Therefore, runners were fastened to the ends of the trailer bearing beams, clearing the ground by 4 in., to catch the load should unevenness of the ground start it to tip. The same shoes and bearing beams were used for each machine. They were bolted together to permit changing and to take trimmers and slip-forms with 10-, 12- and 16-ft. bottom widths, as the canal cross-section is variable on the projects."

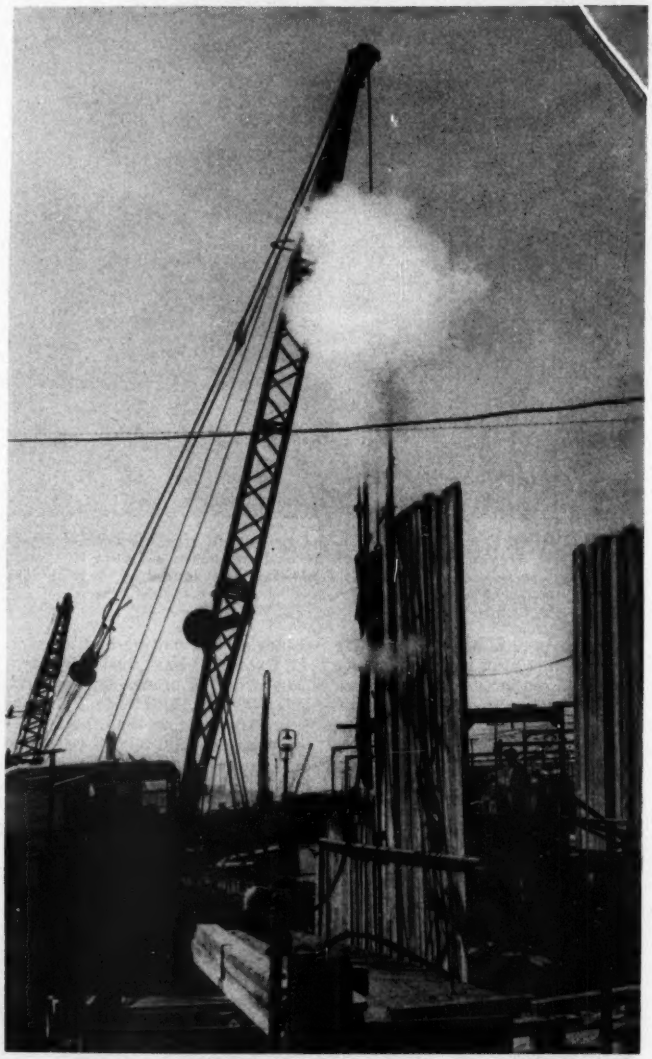
Bucket on Tractor Steps Up Pouring Cycle

A 16-S MIXER couldn't keep up with the pouring cycle set up by this tractor-mounted concrete bucket on basement construction at Bay Park Houses, Hewlett, L.I., N.Y. Affixed to a TractoShovel attachment on an Allis-Chalmers HD-5G tractor, the ½-yd bucket provides a 14-ft dumping clearance. A Greer hydraulic accumulator (shown in the photo mounted directly in front of the operator) smooths the operation. The accumulator has a large rubber sack inflated to 750 psi air pressure, and serves as a cushion to absorb shocks normally transmitted to the tractor frame. The unit was designed by Bob Alliegro, Eilbar Construction Co., and fabricated by Bernie Puff of the Frantz Tractor Co.

Sheeting Jig Insures Fast Sewer Job

Clears Way for Contractors to Beat Schedule

CONSTRUCTION INGENUITY all along the line—a 2-mi, 108-in. dia outfall sewer line—paid off with the Oakland (Calif.) project's completion 8 months ahead of schedule. And this in the face of wet, heaving ground that required sheeting of the trench every inch of the way. Key to job progress was a mobile sheeting jig that positioned and held the timber lagging in multiples for fast driving. With it, as much as 245 lin ft of trench was sheeted daily.



JIG HOLDS LAGGING for sheeting 20 lin ft along each side of trench at one time on Ben C. Gerwick Inc. & George C. Pollock Co.'s Oakland, Calif., outfall sewer project.

Rides Edge of Trench

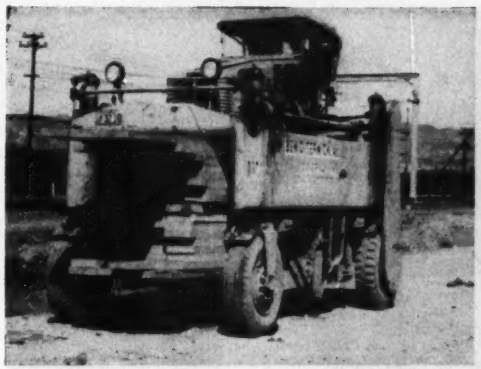
The sheeting jig was a 20-ft long, welded, pipe-frame carriage on rubber-tired wheels. It rode timber-braced steel channel assemblies 60 ft long and 13 ft wide (trench width) that were accurately set to line and grade in advance. In certain sections it rolled on H-beam wales that later braced the cut.

The two sides of the jig were each fitted with a longitudinal pipe and wood-faced steel-channel rub rail, between which 20 to 25 lengths of 3x12-in. timber lagging could be held at one time for sheeting each side of the trench. The pipes, on hinged arms, were swung up by hand crab on the jig's deck so lagging could be inserted, and were lowered by gravity to force the sheets against the rub rails during driving. The rub rails were fastened to the jig by screw jacks so they could be moved in or out to exact position. These and the tracks below guided the lagging accurately.

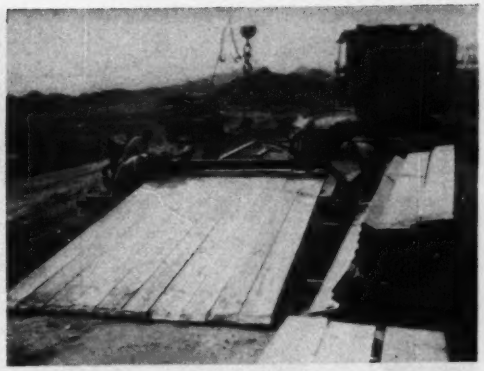
Lumber for lagging was spotted along the sewer line by straddle truck. There the lower end of the lagging was beveled on one face to prevent drifting in, off line, as it was driven. A clamping device handled by crane fed several pieces of sheeting at a time to the lagging jig. The clamp consisted of a steel frame into which the top of the sheets were placed, and which forced them firmly together and held them in a panel as the lifting lines were tightened.

After the sheeting was driven, the trench was clammed out to grade, with the sheets braced by H-beam wales and timber struts. The steel wales permitted wide strut spacing, and speeded the work by allowing installation of the sewer pipe in 16-ft lengths rather than in 8-ft lengths, as originally contemplated.

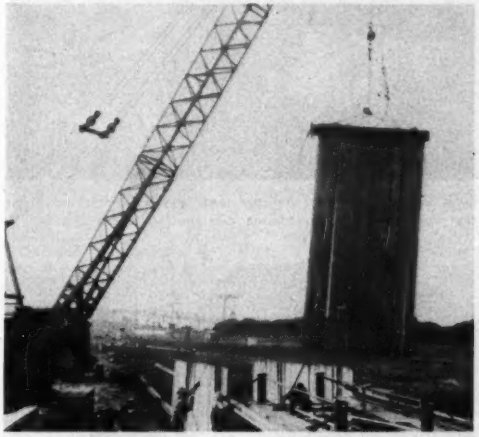
Driving of timber foundation piles for the sewer came next, followed by spreading of a minimum 2-ft layer of coarse sand topped by 6 in. of crushed rock and an 18-in. reinforced concrete mat. Sand,



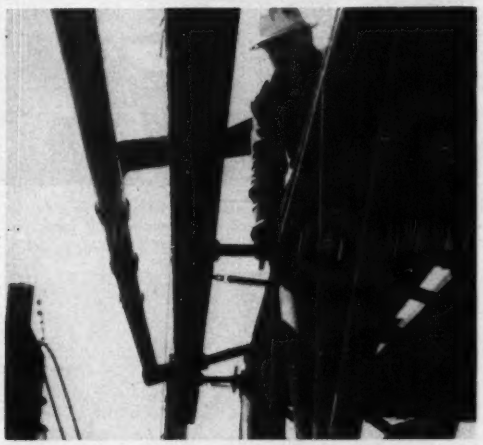
LUMBER IS SPOTTED along sewer trench by Hyster straddle truck for placing in sheeting jig, which can take 40 to 50 pieces.



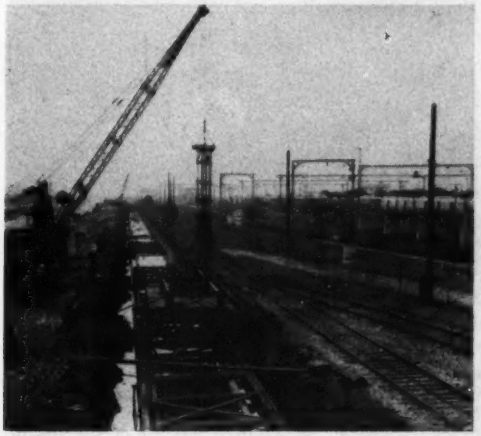
LAGGING IS PLACED in clamping device for multiple loading into jig. The 3-in. planks have been pointed for better driving.



SHEETING IS LIFTED as a unit and fed to jig, with head clamp holding planks tightly together in a panel. Loading goes fast.

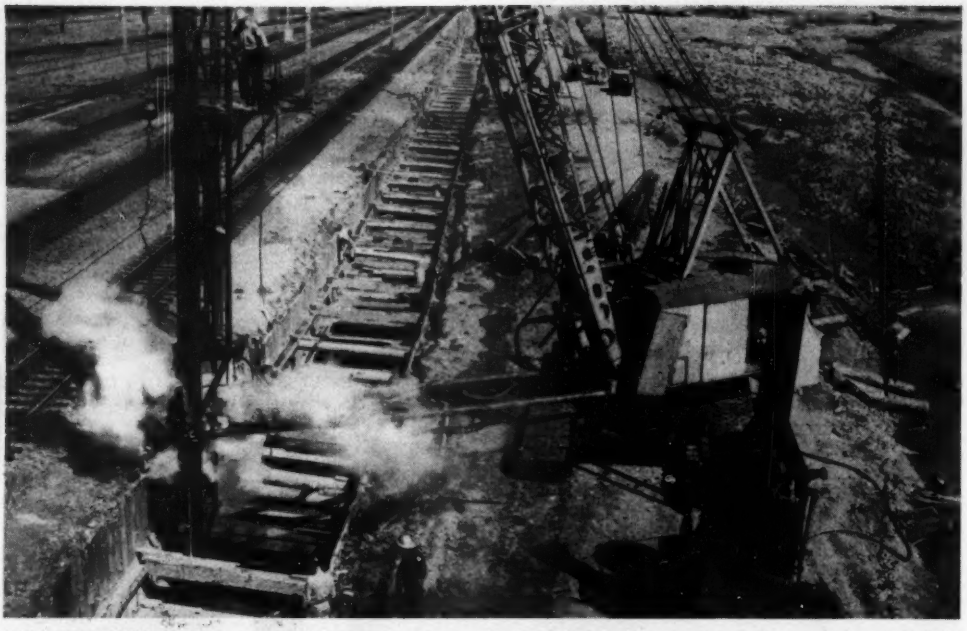


JIG IS ADJUSTED by trench jacks holding rub-rail edge. Sheeting will be held firmly, exactly on line, between rail and pipe.

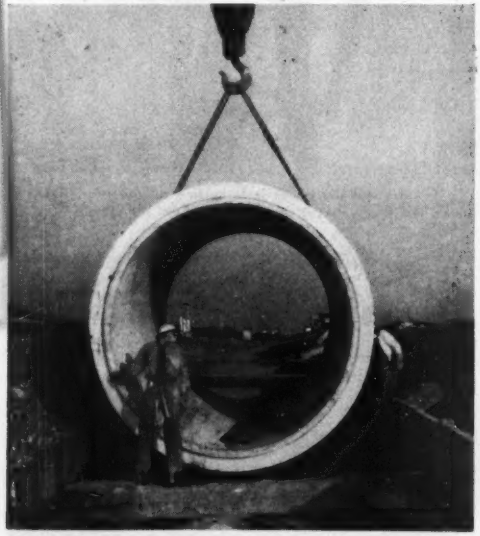


LAGGING IS DRIVEN by Lorain Moto-Crane with McKiernan-Terry hammer in swinging leads. Proximity to bay makes job mighty wet.

FRAME IS MOVED, after sheeting reaches deck level, for completion of driving. Jig's wheels ride on braced channel track.



TIMBER PILES ARE DRIVEN in excavated trench 13 ft wide, to support sewer. This big Manitowoc crane handles 95-ft telescopic leads with Vulcan No. 1 hammer, and tows wheel-mounted boiler that supplies steam. Foundation pile spacing is 4x8 and 6x8 ft.

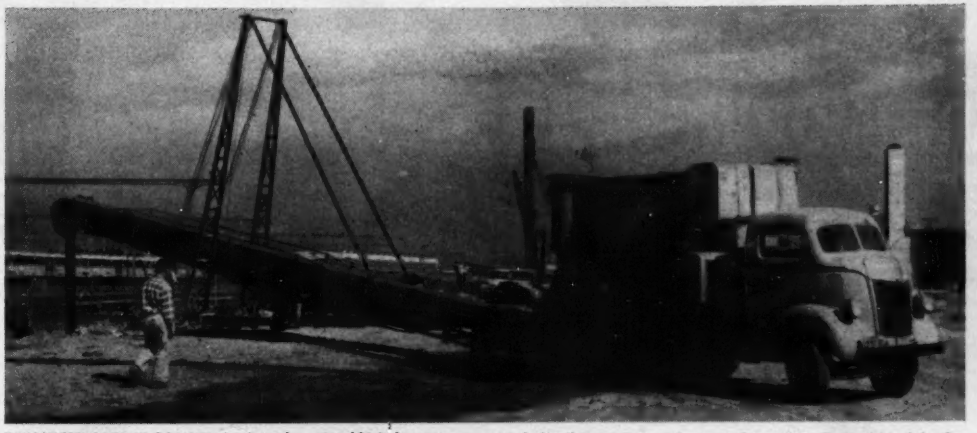


PIPE IS LOWERED into place by same crane that drove foundation piles. Pipe is 16 ft long, 108 in. in dia, and weighs 32 tons.

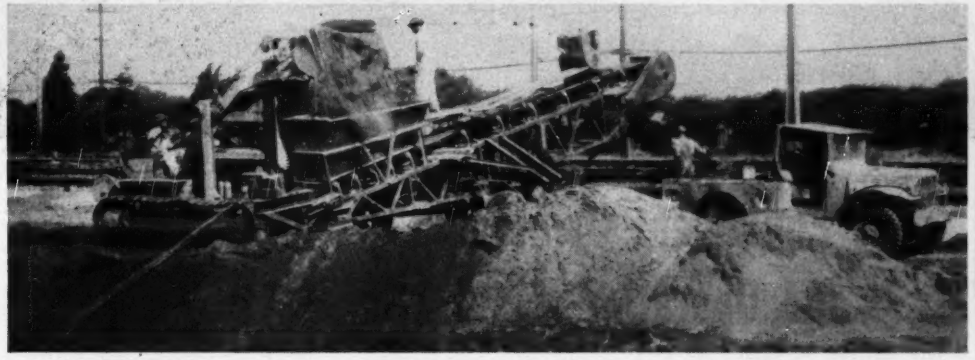
STRUTS ARE REMOVED by spreading the wales with a jacking beam so next pipe length can be placed. Beam carries 75-ton jack.

crushed rock and concrete were placed in a hurry by portable belt conveyors that traveled alongside the trench. They were fed the selected fill by tractor-shovels, and the concrete by transit-mix trucks.

The 32-ton sections of pipe were lowered into the cut and rested on 12x12-in. timber blocking on the concrete slab. Where the transverse struts of the trench bracing interfered with pipe placing, they were quickly freed by forcing the wales apart with a steel beam and 75-ton hydraulic jack assembly. As many as 33 16-ft lengths of the 108-in. ID pipe were set in the trench in one day. A 12-in. sand cushion was



CONCRETE BASE IS POURED by Farquhar portable belt conveyor that is fed by Rex transit mixer on Ford truck. Rubber elephant trunk distributes mix over bottom of trench to form 18-in. slab after similar conveyor has placed sand and stone sub-base.



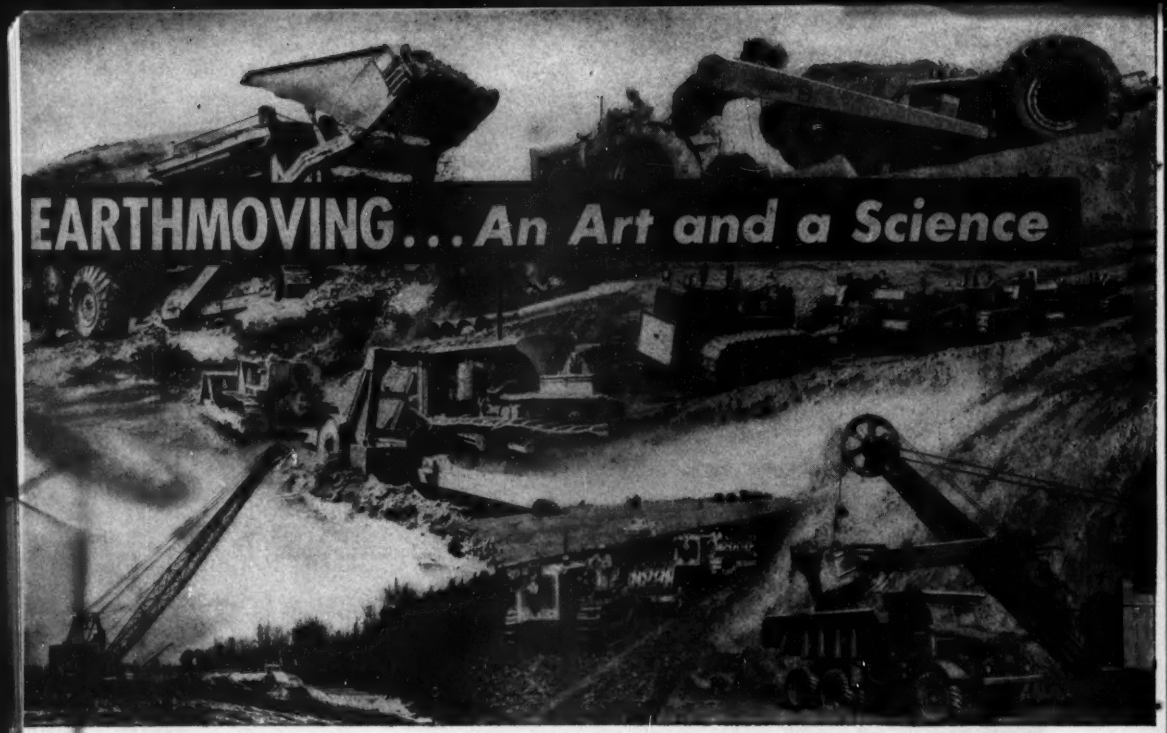
SELECT BACKFILL IS PLACED under and around pipe, which is blocked 12 in. above reinforced concrete base slab. Traxcavator on Caterpillar D7 dumps material into hopper of conveyor whose head carries swinging chute for easy distribution of backfill.

PIPE JOINTS ARE GUNITED inside after sealing with driven lead fiber gasket. Although manholes on 2-mi sewer are spaced every 500 ft, this Gunite outfit needs be set up only at every other manhole because it is equipped with more than 500 ft of hose.

then spread beneath the pipe, all placed from one side to prevent air pockets, and the backfilling completed by the portable belt conveyors.

Joint venturers on the $1,688,000 outfall sewer contract were Ben C. Gerwick, Inc. and George C. Pollock Co., general contractors of San Francisco and Sacramento, respectively. Al Cantor was superintendent on the fast-moving project.

Owner is Special District No. 1 of the East Bay Municipal Utility District. W. R. McLean is in general charge of their sewage construction program and Otto C. Bohl was resident engineer on the outfall.



4. Equipment Ownership and Operating Costs

BY DAN K. HEIPLE Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, Ill.

This is the fourth of a series of articles on the fundamental principles of earthmoving. Sections on earthmoving history, job analysis, equipment selection, and application of bulldozers, scrapers and rippers have already been published in our last three issues. Still to come are comprehensive articles on such subjects as production factors, production and cost estimates, equipment maintenance and repair, compaction and application of other types of earthmoving equipment.—THE EDITOR

THE CORRECT DETERMINATION of the cost of owning and operating construction equipment is a much-debated subject. Many individual methods or variations have been advanced and are being followed by both manufacturers and contractors. The means by which these costs are determined is extremely important, since, from them, the net cost per yd of moving earth and the contractor's bid prices are determined.

Essentially, the method of determining the net cost per yd of owning and operating earthmoving equipment should be a simple one. If the productive capacity of the machine and its ownership and operating costs are known, it remains but to divide the cost by production to obtain the net unit cost of moving the material.

Job conditions, job operation, machine operator's ability, weather conditions, length of earthmoving season, exposure of equipment, relative rigor of work at hand, care of equipment both in operation and maintenance, and many other factors make it extremely difficult to estimate accurately hourly ownership and operating costs. However, past equipment experience can be applied to predict, with fair accuracy, the hourly costs on both old and new lines of equipment.

Complete hourly job costs are generally broken down as follows:

(1) Ownership costs
(2) Operating costs
(3) Supervision and overhead costs

Some contractors also take into consideration such indefinite items as profit, and profit on equipment rental; others consider operating costs only, completely disregarding the costs of ownership. Here, both ownership and operating costs will be considered. When discussing costs, one should be sure that all costs are based on the same factors.

Ownership Costs

Ownership costs, or fixed costs, are those for which a sinking fund can and should be set up. The actual initial outlay is seldom charged off on one particular job, but should be prorated over all the work done by the equipment throughout its lifetime.

Included in these fixed costs are such factors as depreciation, interest, insurance, and taxes.

DEPRECIATION—Depreciation is the setting up of a reserve, in relation to use, for purchase of new equipment when the depreciation period is over, or when equipment is worn out. This reserve varies with the anticipated life, determined either through wear or obsolescence, of the equipment. Usually, however, equipment of mobile types is depreciated in considerably less time than its actual mechanical life expectancy. The figure commonly accepted is 10,000 hr of work, with a range of from 8,000 to 15,000 hr. In figuring depreciation, no salvage or trade-in value is considered after original purchase. Any value remaining after the period of economical use of equipment has expired would be used for trade-in purposes to lower the original cost of a new machine.

Most equipment is so designed that certain parts are subject to more wear and are easily replaced without effect upon the general condition of the machine as a whole. Such parts replaced should be considered an operating repair cost.

For this reason, in figuring depreciation on rubber-tired equipment, the retail replacement cost of tires is deducted from the total delivered cost. Tire life, being less than equipment life, is considered an operating rather than an ownership expense.

Using the most common method of figuring machine depreciation, the basic machine life of 10,000 hr is spread over a 5-yr period of 2,000 hr of use per yr. This method provides an average rate of depreciation, highly desirable in estimating. It eliminates the confusion of continually changing the rate charged against a job for a given piece of equipment, and also eliminates making different charges for different pieces of equipment of the same type and size but of different ages.

As an example, consider a unit of heavy equipment whose weight is approximately 32,220 lb with freight rates at about $1.50 cwt.

List price fob plant	$22,000
Freight @ $1.50 cwt.	480
Approximate delivered price	22,480
Retail tire replacement cost.	2,940
Delivered price less tires...	19,540
Depreciation period (hours)	10,000
Hourly depreciation cost	$1.95

If it is the intention to rent equipment to others, the loss in resale value of equipment is greater on new equipment than on old, so depreciation must be correspondingly more.

Some states require that a minimum 25% per yr depreciation be set up. Some users apply depreciation periods of 4 to 6 yr. This period is determined largely by whom and where the equipment is used. Under such conditions, the number of hours equipment is operated within the depreciation period determines the work-hour depreciation rate. Busy equipment has lower depreciation rates than that which is idle in a fixed calendar write-off period.

INVESTMENT — Interest, insurance and taxes are computed on the basis of average investment. The average investment for any given depreciation period is determined by the following formula:

$$\frac{N+1}{2N} \times \text{delivered price, where } N = \text{number of years}$$

Using a normal five-year period,

$$\frac{N+1}{2N} = \frac{5+1}{2 \times 5} = 6/10 \text{ times delivered price.}$$

Considering the same piece of equipment with a total delivered price of $22,480, the average investment is 6/10 x $22,480 = $13,488.

Since the above formula is not immediately obvious, average investment may be further clarified in this manner: In the example above, an equipment life of 10,000 hr was to be fully depreciated in 5 yr at the rate of 2,000 hr per yr. There will be, then, the following value left at the beginning of each year.

	Hours Left at Beginning of Period	*Value*
1st yr	10,000	$22,480
2nd yr	8,000	17,984
3rd yr	6,000	13,488
4th yr	4,000	8,992
5th yr	2,000	4,496
TOTAL—Five Years		$67,440

Dividing $67,440 by 5 yr gives $13,488 for average annual investment and is 6/10 the approximate delivered price, the same as in the formula.

Interest is computed on the contractor's average cost of obtaining money for purchase of equipment, and is composed of interest on short term loans or monthly equipment notes held by manufacturer or distributor. Insurance includes cost of premiums covering insurable risks such as fire and theft. Taxes are those personal taxes on assessed valuation of equipment, and corporation taxes on capital value of equipment, but does not include state or U. S. income taxes.

These three factors are based on a percentage of average annual investment at the following estimated rates:

Interest, 6%; Insurance, 2%; Taxes, 2%; Total, 10%.

The example shows an annual investment of $13,488. Total interest, insurance and taxes per year = 10% x $13,488 = $1,348.80. Total interest, insurance and taxes hourly = $1,348.80 ÷ 2,000 hr = $0.67.

Hourly ownership costs are then determined by adding hourly depreciation and interest on investment. Thus,

(Continued on page 61)

DEPRECIATION — Machine's value shrinks in five steps as rig, and operator, gets older

You move more yardage...faster...at less cost!

when you "grease on the go" with ALEMITE portable service stations

Alemite Pumps. Air-operated for delivering pressure gun grease, and gear oil from original drums. Available for individual or "group" installation.

Alemite Hose Reels. For high and low-pressure delivery of pressure gun grease, gear oil, and air. Available in single or multiple units to suit any requirement.

You Save Time by bringing complete power lubrication to equipment right on the job! Air operated pumps deliver grease or gear oil direct from "barrel-to-bearing." Free from dirt! Free from dust!

You Save Money by cutting the costly equipment "downtime" required for lubrication, thereby increasing the output of both your men and machines.

You Save Equipment by keeping your earthmoving rigs running smoother, longer—no matter how far afield they may be! And, you reduce greatly the possibility of bearing failures.

Now S-E-C-T-I-O-N-A-L-I-Z-E-D to make up any portable greasing rig you want!

You can suit your needs EXACTLY with Alemite! Whatever selection of chassis or gear-oil pumps and reels you require for 100 lb. drums, you can easily combine them into one portable rig for on-the-job lubrication!

Other Alemite Portable Service Stations are also available for 400 lb. and 54 gal. capacity drums.

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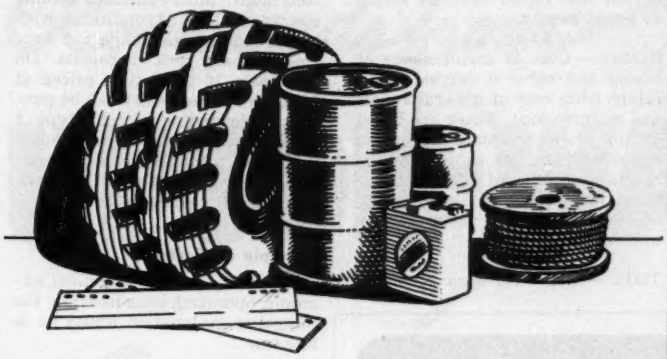

OPERATING COSTS — Also add repairs and operator's wages

(Continued from page 59)

Hourly depreciation	$1.95
Int., insurance and taxes	.67
Total ownership cost per hr	$2.62

Where equipment is government owned, governmental agencies do not usually consider ownership costs because public funds are not raised for interest-bearing purposes, but only to purchase equipment initially. New outlays are appropriated as the need arises. Governmental agencies operating equipment do not, as a rule, pay taxes or make outlays for insurance on equipment.

Operating Costs

Operating costs include: Wages of operator, fuel, lubrication, repairs, blades and cables, and tires. These costs are determined largely on the basis of past experience. They are naturally subject to revision as more experience is accumulated with types of equipment and as the prices fluctuate. Most of these costs are affected by local conditions, availability of labor, supplies and local prices.

WAGES—In the case of operator's wages, minor revisions will have to be made depending on the locality. However, the average wage of a heavy-equipment operator in the U. S. varies from $1.25 to $2.50 per hr with an over-all average wage of $2.00. Generally speaking, the more skill that is required or the greater the operating fatigue, the higher are operator's wages. Union operator rates of pay are frequently based on horsepower and capacity of the unit operated.

FUEL—Fuel costs are based on the hourly consumption of the particular engine under average working conditions. If the machine use is excellent, costs may be decreased 1/3; if poor, it may be increased 1/3. Here, diesel fuel is estimated at 14c per gal; gasoline at 20c per gal. Local conditions greatly affect prices of fuel, and in some localities it is extremely difficult to secure certain grades. In cases of this nature, fuel costs are greatly exaggerated. Experience has shown that lubricants and lubricating labor amount to approximately 50% of the fuel costs per hr.

REPAIRS—Repairs and maintenance include the estimated cost of labor and parts involved in major overhauls at end of the working season, as well as minor adjustments and replacements that may be required during the working period.

Estimators arrive at repairs and maintenance in a variety of ways. Some express it as a percentage of the purchase price, dividing this by the number of hours worked per year to arrive at the hourly cost. Others express the total cost of repairs during the life of the machine in a percentage of the purchase price, dividing this factor by the total number of hours figured for equipment depreciation. Most methods should be used with caution. It is safest to determine the actual cost of repairs before a percentage may be fixed. These costs for a given type of service should be in proportion to the hours used.

Using a basis of past experience, allowance for maintenance and repair equal to 90% of the first hourly cost of heavy equipment has been more than sufficient

ROSCO
MINNEAPOLIS
MAINTENANCE UNITS
TRUCK MOUNTED
for Driveway or Highway
with these Distributor Features:
● Load...Transfer...Spray... Handspray...Circulate...Suck-back ...Cleanout...Gravity Draw-off.
● Constant sprayline pressure maintained through by-pass valve to tank.

Truck Mounted Model RHU

This low cost machine is designed for jobs that would not be economical to handle with large distributors. For the smaller operator who wants to do more work—as well as for the larger operator for whom no job is too small. A complete road and street maintenance unit for cities, towns, counties and states with limited budgets.

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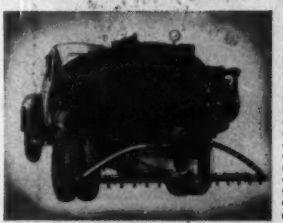
Trailer Mounted Model RMT

BITUMINOUS EQUIPMENT
ROSCO MANUFACTURING CO.
3118 Snelling Ave. • Minneapolis 6, Minn.



Rear view of Model RHU showing style "C" circulating sprayber

under the most severe working conditions. The estimates for maintenance and repairs vary from 70% on larger units of equipment to 90% on smaller units.

It is reasonable to expect that the labor required to maintain repairs on larger equipment is not in true proportion with that required for small units. Therefore, maintenance costs will vary largely due to the increased costs of the larger parts.

Hourly costs of repairs depend largely upon severity of use or working conditions and the care and attention given equipment It is best that repair costs be stated as a cost per hr.

BLADES — Cost of maintenance of blades and cable is carried separately from cost of general repair and maintenance. These are based on the productive capacity of the equipment and its cable requirements as compared to the equipment for which complete records of blade and cable costs may be known.

TIRES — Tire costs vary considerably in accordance with working conditions. Most estimates assume average to difficult conditions, with haul roads in fair shape but kept free of sharp rock fragments. On this basis, 10 to 20 tires priced at 75% of consumer's list will be purchased, depending upon the type of equipment. Experience has shown most contractors buy tires in considerable volume and in this manner earn discounts up to 25%.

Example of Costs

Returning to the equipment example, operating costs based on the foregoing explanation would be as follows:

Operator's wages per hour	$2.00
Fuel (@ 14c per gal, 5 gal per hour)	.70
Lubricants (50% fuel cost)	.35
Maintenance and repairs	1.76
Blades and cables	.30
Tires (10 @ 75% list ÷ 10,000 hr)	.74
TOTAL HOURLY OPERATING COSTS	$5.85

Total estimated hourly costs of ownership and operation, then, would be:

Ownership cost per hr	$2.62
Operating costs per hr	5.85
TOTAL	8.47

These costs include all items applicable to hourly expenses and operating equipment. Individual cost sheets can be worked out on each type of equipment.

It is to be expected where so many varying factors are involved, that no fixed price can be placed on the cost of owning and operating a machine that will apply equally well in the United States and foreign countries. For example, freight, fuel and repairs are much higher abroad, while labor is correspondingly lower. However, many are inclined to believe that these factors tend to balance out in the long run.

In arriving at these ownership and operating costs, it should be emphasized that supervision, overhead and profit have not been included. These items are so dependent upon the individual contractor's setup and the manner in which he conducts his business that they must be left entirely to individual computation.

* * *

Ed. Note: The fifth article in this series will appear in the May issue.

OVER
1,000,000 CUTTING TORCHES
Demonstrate
IT COSTS LESS TO OWN AND OPERATE
VICTOR
More than 1,000,000 VICTOR torches have been bought by the world's leading metalworking plants, shipyards, steel mills, foundries, scrap yards, welding shops, railroads, and others, for flame cutting all thicknesses of metal from light sheet to armor plate. Here's why so many prefer VICTOR cutting torches:
4 DIFFERENT VALVE LEVER POSITIONS — Operator can choose position that "feels" right to him.
CHOICE OF 90°, 75°, 45°, OR STRAIGHT HEAD—all interchangeable, so you can quickly change from one to another as work requires.
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Standardize NOW on Victor for cutting and welding—it will cost you less. Ask your Victor dealer to show you.
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Rope leads from

UPSON-WALTON

How to lubricate wire rope

● Each wire in a rope is a "live wire"—since it moves with respect to its neighboring wires every time the rope bends or flexes. This causes wear, which can be reduced by proper lubrication.

In an Upson-Walton rope every wire is lubricated as it is stranded—thus lubrication is built in. However, for long life this lubrication should be repeated periodically. Use a lubricant which:

- **is commercially chemically neutral.**
- **can penetrate between the wires and strands and to the core of the rope.**
- **is adhesive enough not to be thrown off by vibration.**
- **will not either harden or soften under extremes in temperatures.**

With proper care Upson-Walton wire rope will give you longer life, greater safety and greater economy. Use of the best materials and methods, and thorough testing are your assurance of quality. Specify Upson-Walton on your next job.

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wire rope • rope fittings • tackle blocks

MATCH YOUR WIRE ROPE TO YOUR FITTINGS AND BLOCKS... ONLY UPSON WALTON OFFERS ALL THREE

HERE'S A WHITE six-wheeler doing a great job in the construction industry. This Model WC-2264 has 160 inch wheelbase . . . is rugged and powerful for dump truck service.

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MORE BUILDING...MORE WHITES!

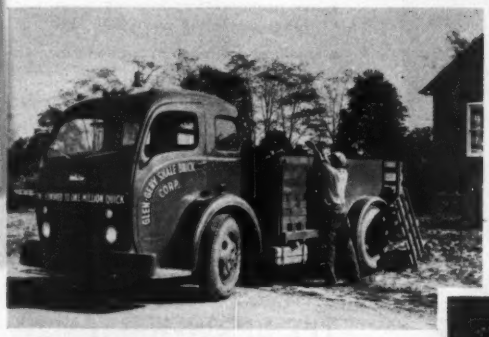
TRUCKS just have to be good to keep on the go in the busy construction industry. That's why more and more Whites are going into service on these extra-rugged jobs.

Whites are built for the tough assignments. They have the stamina . . . the ruggedness . . . the dependability that come from quality engineering, finest of materials, manufacturing craftsmanship.

And a wide range of models and specifications assures a White carefully tailored to your exact requirements. Get facts from your White Representative.

THE WHITE MOTOR COMPANY

Cleveland 1, Ohio

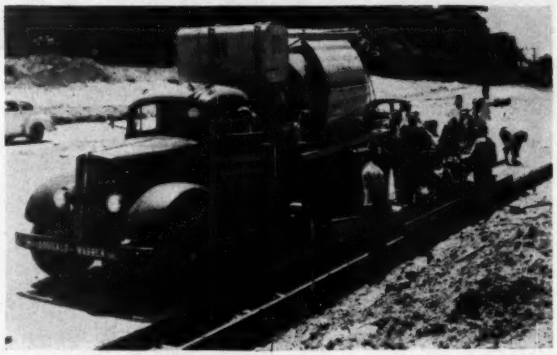


EXTRA carrying capacity . . . low loading height with this great new White 3000 for building materials.

WHITES are ideal for cement mixing equipment of all sizes . . . providing dependable, economical service.

White

Builders of the complete line of White Trucks for the construction industry including White Super Power . . . White Diesel Power . . . sturdy six-wheelers . . . and the White 3000 with power-lift cab.



FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

"Washington calling!"

We were expecting this call. In a sense it is the people of America on the other end of the telephone. For some time they have been calling upon our government to take whatever steps are necessary to equip our fighting men for any job they may have to do.

Korea has proved the fallacy of limited preparedness. You know now that the nation is girding for survival. The people of America have said—and rightly—that private industry should provide the Armed Forces with whatever is necessary.

Machines are being mobilized. "Caterpillar" products are wearing olive drab once more. Because of large military demands your present machines may have to work longer than you had anticipated.

You can get many extra hours of machine service life if you:

1. **Follow a sound program of operation and maintenance.**
2. **Consult your Operator's Instruction Book, using it as a constant guide in caring for your machines.**
3. **Secure the assistance of your "Caterpillar" dealer who now, more than ever before, is your working partner for the grim job that may lie ahead.**

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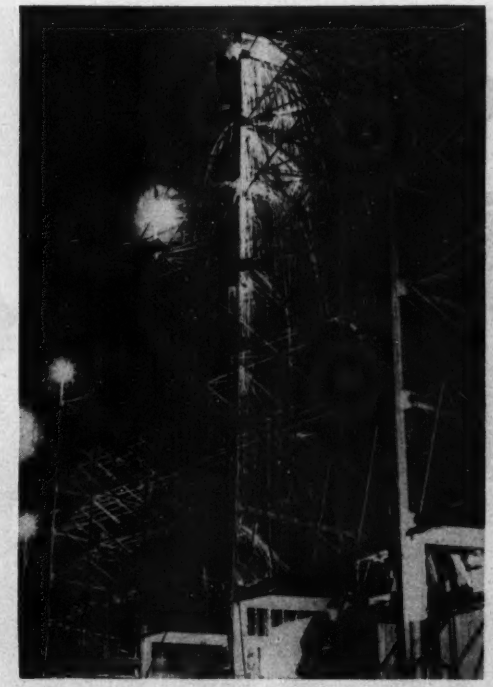
CONSTRUCTION 'ROUND THE WORLD...

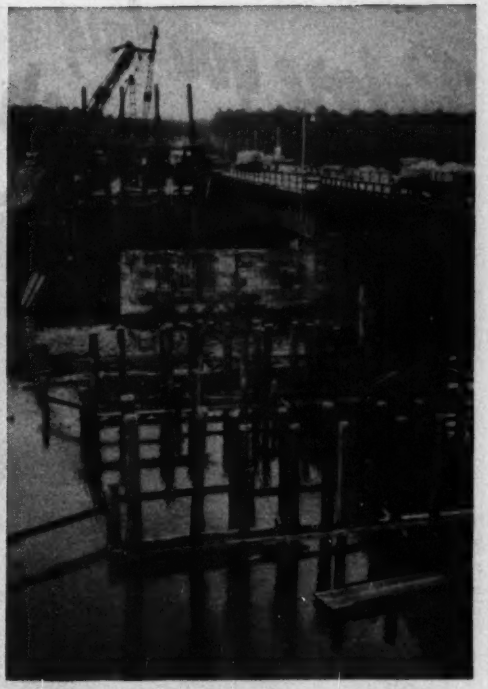
GREECE—Cut-and-cover section of 17-mi Marshall Plan aqueduct for Athens is poured in steel forms riding rails on invert. Curved plates direct bucket-dumped concrete to walls.—ECA Photo

BELGIUM—Long and heavy furnace stack is raised by twin gin poles for Antwerp oil refinery. M. W. Kellogg Co., Jersey City, N.J., is contractor for plant with 30,000-bbl daily capacity.

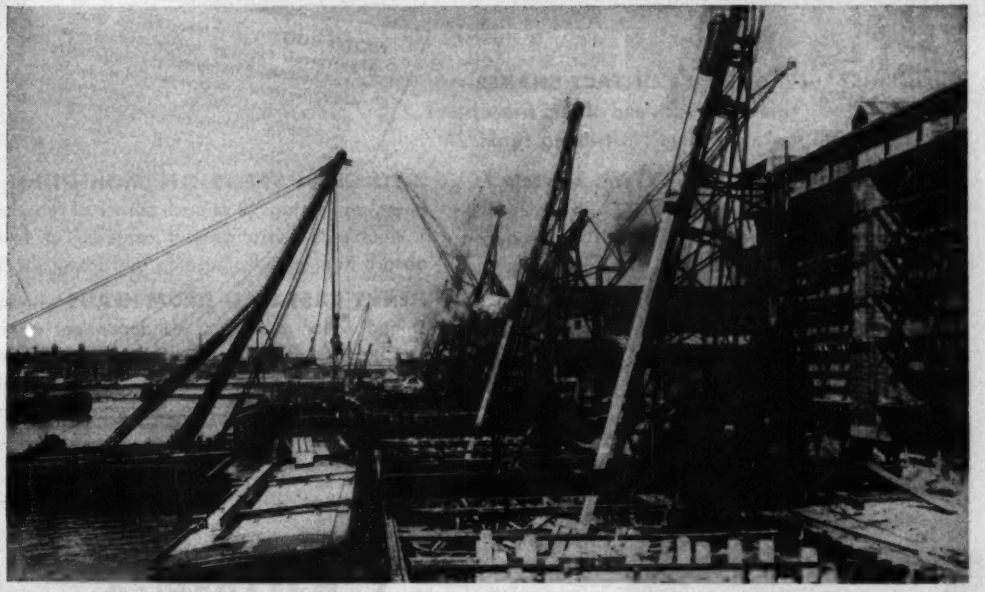
MEXICO—Form-builder's nightmare is presented at University of Mexico, Mexico City, where little of concrete classroom building is on the level. Floors slope to give theater effect, increasing students' view but complicating construction. At rear is 15-story science building, farthest along of many structures in $11,000,000 relocation.—McGraw-Hill World News



ENGLAND—Construction of buildings for Festival of Britain, London, is rushed day and night to prepare for fair's opening next month. British construction industry will exhibit there.



GERMANY—Huge winches and jacking posts (left rear) raise heavy Berlin Autobahn span that was dropped off piers during war. At right is temporary beam span it will replace.—Acme Photo



THE NETHERLANDS—Battery of rail-mounted drivers puts down concrete piles for reconstruction of Rotterdam's wharfs. Rigs ride transverse beam carriages spanning sheetpile cofferdam; carriages ride longitudinal rails for quick positioning. Now completed, rebuilding of 24,000 lin ft of war-wrecked quay walls called for 12,000 concrete piles; 19,000 tons of steel sheeting.

Before you buy any mixer check KWIK-MIX

16-S DANDIE® advantages

MOTO-BUG® . . . labor-saving power wheelbarrow takes all heavy manual work out of hauling, backing up, spotting, has full power forward and reverse . . . no push, no pull necessary. 10 cu. ft. hopper converts to 1200 lb. flatbed, fork lift, scraper blade.

✓ **ADJUSTABLE, DOUBLE-CONTACT SHAKER** on skip, with contact at each end of skip frame, has vertical shaking action. No twisting strain.

✓ **AUTOMATIC WATER SYSTEM,** accurate to fraction of a pint, combined with exclusive blade-and-bucket re-mixing action, produce consistent quality concrete every batch.

✓ **8-SECOND DISCHARGE** . . . tilted Flow-Line Discharge Chute, available only with Kwik-Mix, reaches deep into drum, discharges full batch in 2½ revolutions, saves seconds every batch.

✓ **INTERCHANGEABLE** side or end discharge . . . mixer can be changed from side to end discharge in less than an hour, because axles are easily interchangeable on square frame.

✓ **3-POINT SUSPENSION MOUNTING** on heavy coil springs (2 at each corner of rear, and 1 double-coil arrangement centered at front) absorb high-speed operating and travel shocks.

✓ **HEAVY CAST-STEEL DRUM HEADS** with machined roller paths . . . independent engine clutch . . . multiple V-belt drive . . . Tower Loader for overhead discharge . . . special 90" skip, are other 16-S features worth checking.

Before you buy any mixer, get all the facts from your Kwik-Mix distributor on this big-production 16-S Dandie. Other sizes: 11-S, 6-S, 3½-S . . . also, bituminous, tilting and non-tilt plaster-mortar mixers, and Moto-Bug.

To: KWIK-MIX Co., Port Washington, Wis. Send new catalog on 16-S Dandie, also:
☐ 11-S ☐ 6-S ☐ 3½-S
☐ 10 ☐ 14 ft. bituminous
☐ 6 ☐ 10 ft. plaster-mortar
☐ Tower Loader ☐ Moto-Bug
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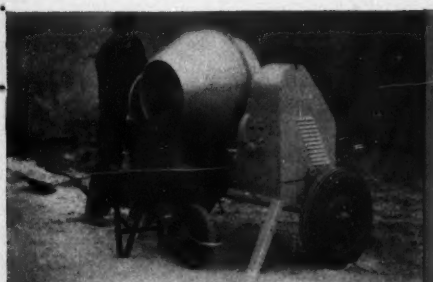
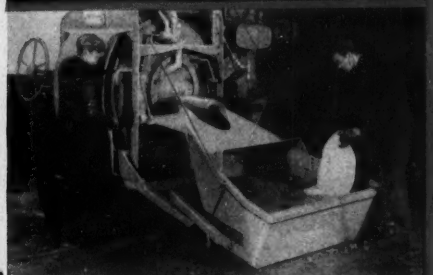


3½-S DANDIE with side or end discharge, tilt or non-tilt drum, is sturdy, light, portable for high quality, on-the-spot mixing.



2-WHEEL 11-S end-discharge, non-tilter, is also available on 4 wheels, side or end discharge for thorough Dandie-mixed concrete.

KWIK-MIX BITUMINOUS mixers . . . 10 and 14 cu. ft., are readily adaptable as stationary plants or as highly mobile 4-wheel units.

FOR DISCHARGE AT 9'-2" HEIGHT . . . Kwik-Mix Tower Loader fits 11-S and 16-S mixers . . . is also available for bituminous mixers. Loads into trucks, forms, overhead hoppers, or [illegible]

4-YD.-PER-MIN. Parsons 310 Trenchliner

With 45 digging feeds, this big-capacity 310 Trenchliner digs up to 4 cu. yards per minute, depending on depth, width of trench and type of material. It produces from 8" to 15½' of clean, smooth-walled trench per minute . . . digs 1½' to 4½' wide and 17' deep with single boom . . . and up to 6' wide at 11' depth with dual booms. 4 smaller models in Parsons line offers a wide choice of sizes to suit your exact requirements.

PARSONS *(Koehring Subsidiary)*
Newton, Iowa

EASY-CHARGING Johnson Lo-Bin Batcher

Lo-Bin Trolley Batcher holds 8, 20 or 30 tons . . . is only 7½' to 9½' high for charging with front-end tractor loader. Lo-Bin has 2, 3 or 4 compartments, up to 4 weigh beams, 22 or 44 cu. ft. weigh hopper . . . or can be arranged for 2 or 3 aggregates and 1 bulk cement compartment. Efficiently serves 28-S, 16-S, 11-S, 6-S mixers. Lo-Bin is quickly dismantled, easily moved by dump truck. Optional: wheels, tires, tow-bar.

C. S. JOHNSON *(Koehring Subsidiary)*
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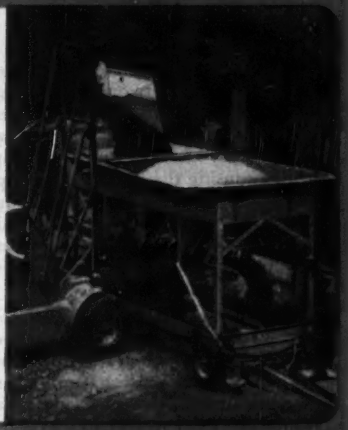

HIGH-DISCHARGE Koehring 16-E *twinbatch*

Here's a portable mix plant with controlled elevated discharge for all types of concrete construction. Boom on Koehring 16-E elevates 60°, swings in 160° arc. Bucket discharges controlled batch up to 21' (higher with special boom). 16-E produces up to 50 cu. yds. per hour, exceeding larger 27-E single-drum paver. Drives 6 m.p.h. on rubber tires job to job. Also check big Koehring 34-E *twinbatch* for major paving.

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W67

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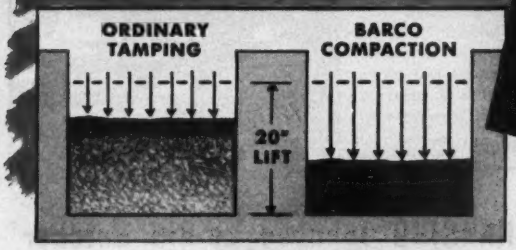
SOIL COMPACTION

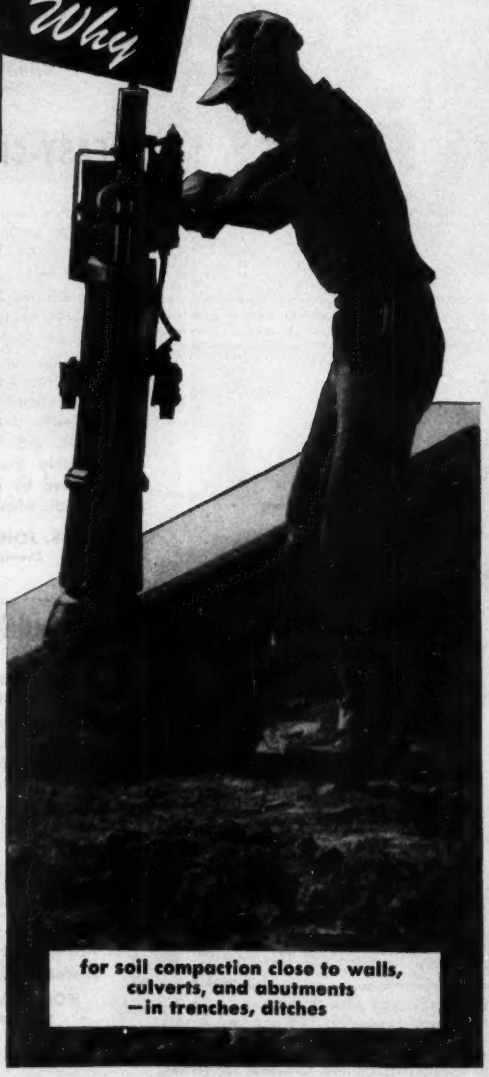


Here's Why

ONLY the BARCO RAMMER can produce specified compaction on lifts up to 20 inches*. This is due to the "one-two punch" of the Rammer. The Rammer jumps about 14 inches in normal operation. It drops with the weight of about 200 lbs. Immediately after the impact, the operator trips the handle causing the Rammer to jump into the air again. This gives a follow-through, or thrusting effect, to the original impact. This double impact differs from the "quick pat" of other tamping devices which tend to produce compaction only on the surface of the fill.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. With a Barco Rammer one man can do the work of five! Ask for the nearest Barco Distributor to give you a demonstration. *Catalog and information on request.* BARCO MANUFACTURING COMPANY, 1812E Winnemac Ave., Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal.

*With lifts from 12" to 20" and averaging two passes, up to 24 cubic yards can be compacted per hour.



for soil compaction close to walls, culverts, and abutments —in trenches, ditches

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"Pegson" Gasoline

RAMMER

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Simple Records Promote Better Equipment Servicing

BY HOMER C. CAMPBELL
Service Manager
H. W. Moore Equipment Co., Denver, Colo.

A PROGRAM for systematic preventive maintenance should be set up for one main purpose—to insure trouble-free operation by the equipment on the job. And at this time, it is more important than ever to conserve that equipment, which in all probability cannot easily be replaced. As an added benefit, you will find that you are getting greater production at less cost.

For the last two months we have given suggestions for building up a file of all available information on machines you are using or intend to buy. Don't permit this file to become your Lost & Found department. The whole undertaking is lost if the information is not provided in a condensed form so as to be usable by your entire organization. Make it simple and readily available.

A prime requirement of a successful maintenance program is to keep a record of adjustments made and service operations performed. Most manufacturers furnish wall charts showing the various lubrication points and their needs. While these are good, they would be even more valuable, and definitely more handy, if they were made in 8½x11-in. sheets punched for ring binders.

For successful maintenance, a guide is needed, listing all the routine service operations that must be performed on the equipment at certain time intervals. And, along with this, there must be some sort of check-chart to insure that the required maintenance is given and the fact recorded. Guide and chart each might very well be a single form covering both weekly and monthly service operations, and they should certainly be kept as simple as possible. By consolidating various related maintenance tasks, and putting them under common headings, the list of operations can be held to not more than ten or twelve items. As an illustration, truck maintenance could be broken down as follows:

Weekly: (1) Operating controls, (2) Electrical system, (3) Cooling system, (4) Front-end assembly, (5) Rear-axle assembly.

Monthly: (6) Engine tune-up, (7) Wheel bearings, (8) Fuel system, (9) Bolts.

An accompanying table shows what operations each of these general headings includes. This, then, would be the maintenance guide. Also shown is a sample check-chart with corresponding numbers that are crossed off as each job is done. If it is kept properly, a glance at the chart will quickly tell the service man or grease monkey the maintenance status of each machine.

In this and preceding articles, we have given only a very bare outline of a program for conserving construction equipment. The subject is a vast one, and one that should have greater attention from contractor organizations. The problem needs national recognition. Parts, men to install them, and replacement equipment are not easily obtainable. However, a concerted effort on the part of our construction industry can whip this situation. At the same time, we will be adding to our productive capacity and increasing our profits by reducing that much-too-large item of about 10% equipment down-time.

MAINTENANCE GUIDE
MOTOR TRUCKS

WEEKLY

1. OPERATING CONTROLS
   - A. Steering mechanism
   - B. Service brakes
   - C. Emergency or parking brake
   - D. Clutch pedal free play
   - E. All instruments

2. ELECTRICAL SYSTEM
   - A. Check all connections
   - B. Specific gravity; liquid level
   - C. Lights and horn

3. COOLING SYSTEM
   - A. Fan belt
   - B. Hose connections
   - C. Radiator
   - D. Water pump

4. FRONT END ASSEMBLY
   - A. Drag links
   - B. Tierods
   - C. Steering gear assembly

5. REAR AXLE ASSEMBLY
   - A. Grease seals and gaskets
   - B. Loose wheel and axle bolts
   - C. Springs and mountings

MONTHLY

6. ENGINE TUNE-UP
   - A. Adjust valves
   - B. Ignition system
   - C. Fuel systems
   - D. Manifolds
   - E. Check for all leaks

7. WHEEL BEARINGS
   - A. Inspect and adjust

8. FUEL SYSTEM
   - A. Clean and inspect

9. TIGHTEN BOLTS, NUTS, CAP SCREWS
   - A. Body bolts
   - B. Oil pan bolts
   - C. Wheel lug and axle bolts
   - D. Engine mounting bolts

SERVICING TASKS may be listed on card; one for each type machine.

UNIT NO.	WEEK					WEEK					WEEK				
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		
	6	7	8	9	10	6	7	8	9	10	6	7	8		
	1	2	3	4	5	1	2	3	4	5	1	2	3		

COMPLETED JOBS should be recorded by crossing off guide number.

ANNOUNCING...

The NEW SHELL ROTELLA OIL

(Extra Heavy Duty Type)

"... exceeds every accepted performance standard for oils in its class"

OUTSTANDING PISTON CLEANLINESS

The new Shell Rotella Oil stands out in the very top bracket with respect to Piston Cleanliness, providing convincing proof of its ability to keep contaminants out of the critical zone in which wear is concentrated.

MUCH LOWER RING DEPOSITS

Ring-plugging tests are really tough, yet new Shell Rotella Oil came through stiff competition with a remarkably low ring deposit rating ... far below the established passing mark!

GREATER ENGINE LIFE

Recognized laboratory engine tests are important in establishing qualifications of lubricants to meet strict requirements. More important to operators, however, is the *tremendous increase in engine life* and the consequent reduction in maintenance expense and time out-of-service that the new Shell Rotella Oil is contributing to fleet operation under today's conditions.

NEW SHELL ROTELLA OIL ...

Stepped up cleaning action...

Even greater anti-wear protection

. . . anticipating the needs of today's high performance fleet engines

TODAY'S hauling conditions are imposing greatly increased demands upon fleet engines . . . and the lubricants selected to keep them running. At the same time these high-performance engines are expected to turn in ever-increasing mileage records between overhauls.

For these reasons, and because even greater performance will probably be expected as time goes on, the detergent-dispersant and anti-wear qualities of Shell Rotella Oil have been markedly increased.

Operators using Shell Rotella Oil in the past will find an even greater latitude in maintenance procedures.

4-WAY LIFE EXTENSION FOR BUSY ENGINES

1. Remarkable detergent-dispersant action

The ability to suspend contaminants has been deliberately stepped up in the new oil. Field tests on vehicles, in widely varying kinds of service, prove conclusively that this greater detergent-dispersant action extends mileage between overhauls.

2. Drastic sludge reduction

Operators who have been having sludge troubles . . . with clogged pump screens, burned out bearings, or clogged oil ways . . . are urged to find out for themselves how remarkably clean those engines will remain while using this new anti-sludge Shell Rotella Oil.

3. Positive Anti-acid action

New Shell Rotella Oil directly counteracts the acid action of fuel combustion products in the vital top-cylinder zone . . . with correspondingly great reduction in wear. This protection is extremely important in the operation of intermittently loaded engines.

4. Extends time between engine overhauls

New or reconditioned engines . . . operating on fuels of widely-varying quality . . . in all kinds of fleet service . . . have demonstrated an important extension of in-service time. *This gain results from improvement in several basic respects: freedom from sludge and ring-clogging, increased valve life and greatly reduced wear.*

SHELL

for all heavy duty fleet engines

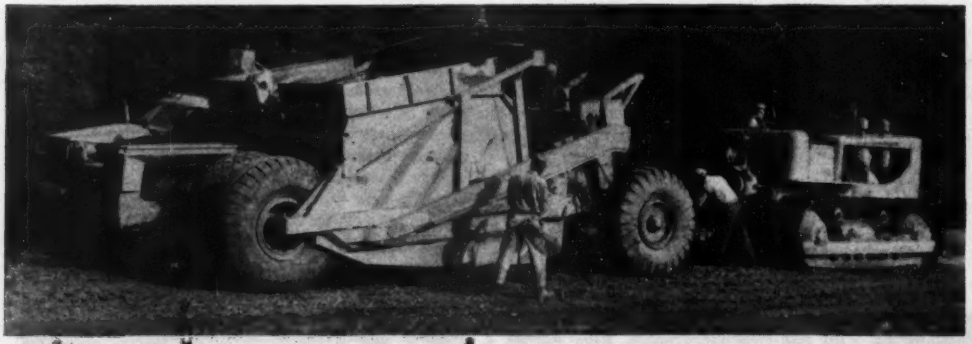
"DON'T STOP FOR NUTHIN' but the lube truck" is slogan here as three Allis-Chalmers HD-19s continue about their business while fourth is gassed and checked in cut. They'll all be taken care of in time, once during each shift. Tread marks on opposite bank indicate care in trimming slopes as 110-ft cut proceeds. Front to rear: Tournarooter; Gar Wood and LeTourneau scrapers.

ANOTHER CONTRACTOR FINDS THAT: Lubrication Truck Puts

WITH FULL TANK of fuel and needed shots of grease, rig takes off with rooter which screams and leaves trails of smoke in effort to find bite in tough shale.

WORK ON THE WESTERN extension of the Pennsylvania Turnpike, both structures and earthmoving, is being paced in Allegheny County by Hunkin-Conkey Construction Co. of Cleveland. Cuts as deep as 110 ft and fills up to 90 ft are common, and careful, methodical lubrication and maintenance have put the rigs on a nonstop schedule.

Close to two million yards of material will be moved, including gravel, sand, coal, shale, and just



SPECIAL RIG GETS special care. One greasemonkey checks cable sheaves and front wheel bearings on Wooldridge Terra-Cobra while other greases built-up bucket arms. Rig has been increased from 18- to 23-yd capacity for hauling sand and other soft fills.

DEEP IN FILL SECTION, lube truck (extreme right) stops tractor-scraper outfit while three others continue their round trips. More thorough daily maintenance check is made during four morning hours rigs are stopped. Here fill has reached 82 ft of total 98½ ft. In all, 169,000 cu yd will be needed. Hunkin-Conkey Co.'s 3.72-mi contract ends at top of rise in background.

Earthmoving on Non-Stop Schedule

plain dirt. More than 800,000 yd of this is waste and will have to be replaced in the fill with an equal amount of borrow. On the section shown in the accompanying photos, crews are working two 10-hr shifts with seven scrapers and moving 12,000 yd per day.

Every piece of equipment is serviced once during each shift by the ever-present lubrication truck, a big 6x6 army rig. Along with 550 gal of diesel fuel and 100 gal of gasoline, it carries 50 gal of water, six 55-gal drums of oil, (No 30 and No 40) and four different weights of Marfak grease. A universal compressor provides air for tires, powers the plungers for fueling, and forces out grease through a bank of six Alemite reels along the rear of the truck. An assorted supply of gaskets, washers, fittings, filters, etc. completes the cargo. Ten tractors—pushing, pulling and bulldozing — are Allis - Chalmers HD-19's, making equipment parts inventory and ordering that much less complex. During the early morning hours another crew checks the rigs more thoroughly, changing oil, greasing, checking anti-freeze and tire pressures, guided by a set of individual equipment maintenance records. At 6 am the equipment is ready for another gruelling 20-hr day. According to one of the earthmoving foremen, "the rigs don't stop for nuthin' but the lube truck," which the superintendent claims is his most important piece of equipment.

Fast Culvert Job Presents No Hold-Up for Scrapers

TO ASSURE uninterrupted dirt-moving, Hunkin-Conkey's structure crews are working equally fast on the 3.72-mi contract, installing culverts and water lines well ahead of the scrapers and haul wagons. Here the secret is just plain cooperation and know-how.

One of the biggest structures—a 405-ft reinforced concrete arch culvert—threatened to delay the earthmoving. Specs called for (1) Chamfering down to a 4½-in. center depth the natural rock that forms an 18-ft-wide stream bed; (2) drilling out footings 3 ft deep and 6 ft 3 in. wide at the bottom, with the outer sides sloping up at an angle of 60 deg; (3) placing a 3-ft height of vitrified clay liner plate at the spring line along both sides of the stream bed to conform with the inner arch; and (4) supporting the acid-resistant lining in place until dovetail anchoring slots on the back were firmly fastened in the concrete of the arch proper.

To make up for time spent on these slow stages of construction, they brought in two sets of Blaw-Knox steel arch forms, 25 ft long, and hurriedly made up two similar sets of wood. Internal arch radii were 9 ft and externals 13 ft. Meanwhile, double 1-in. round reinforcing rods, bent to the shape of the half-arch were embedded in footing pours, with upper ends overlapping 4 ft 2 in. at the crown and supported on a continuous set of posts and stringers running down the centerline of the culvert. When the overlapping bars were wired together, posts and stringers were removed and inner arch forms set at 100-ft intervals,

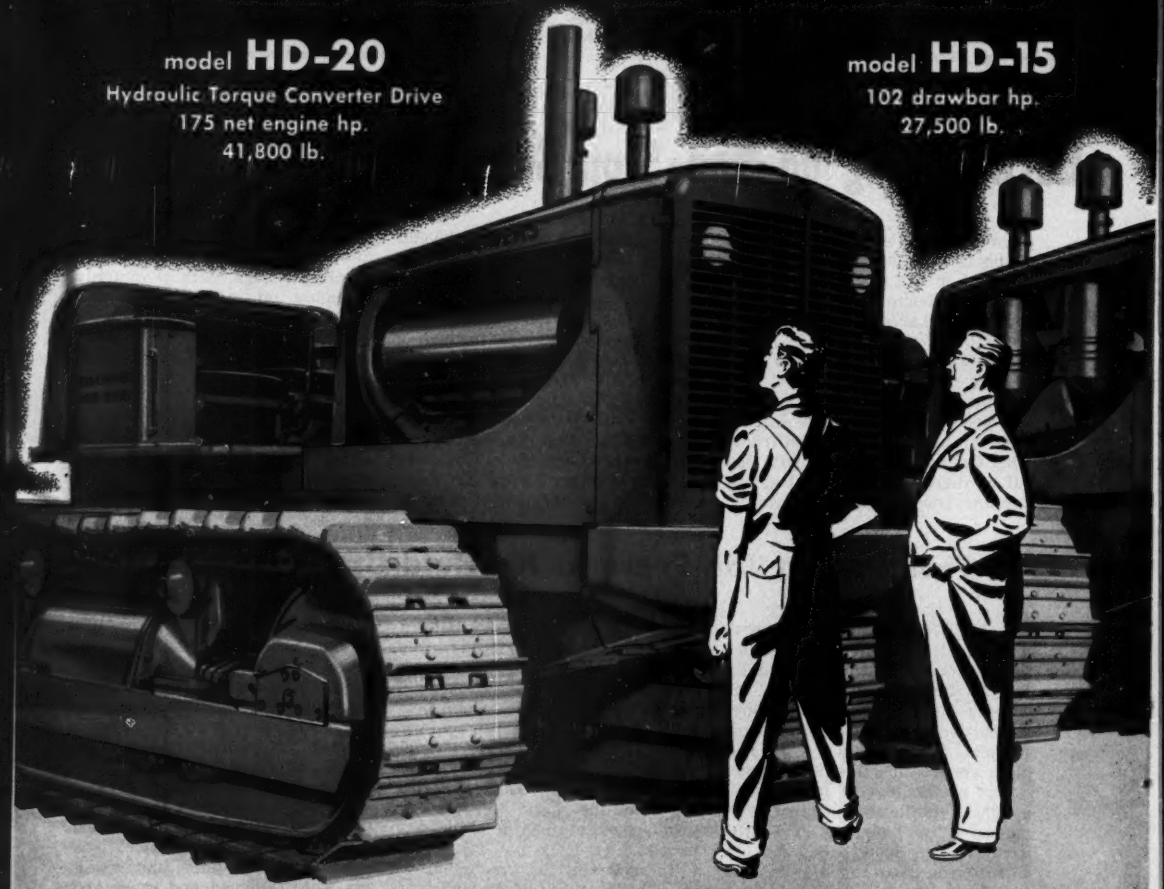
(Continued on page 78)

ALLIS-CHALMERS
Sets New Standards

. . . THE NEWEST, FINEST

model **HD-20**
Hydraulic Torque Converter Drive
175 net engine hp.
41,800 lb.

model **HD-15**
102 drawbar hp.
27,500 lb.



Get the full story from your Allis-Chalmers dealer.
See these tractors perform. They're built for YOUR job!

Designed For The Job
Built To "Take It"
Easy To Operate
Easy To Service

TRACTOR LINE ON EARTH

model **HD-9**
70 drawbar hp.
18,500 lb.

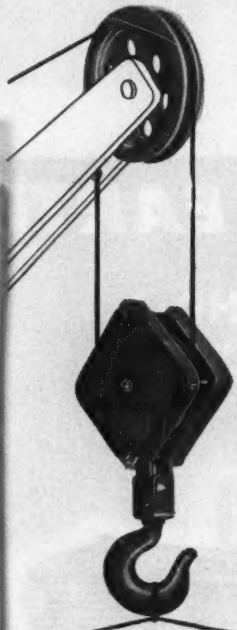
model **HD-5**
40,26 drawbar hp.
11,250 lb.

Originator of the Torque Converter Tractor

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

GET A GOOD LIFT
WITH
MADESCO
TACKLE BLOCKS



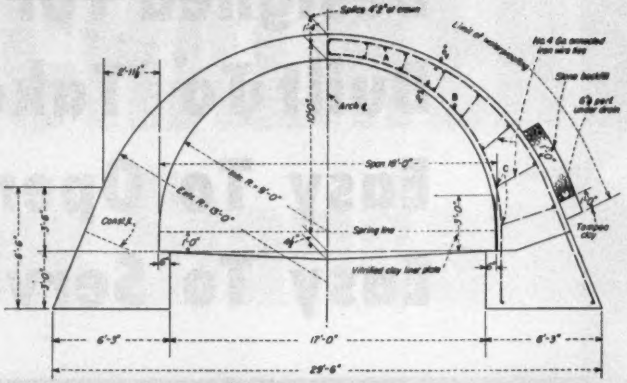
A good lift is one that protects your wire rope investment. Check your equipment and replace with Madesco Blocks and Sheaves having Anti-Friction bearings or bronze bushings, to assure longer life for your wire rope. The Madesco complete line includes a block for every purpose.

Write for our complete catalog.

MADESCO
TACKLE BLOCK
COMPANY
EASTON, PENNSYLVANIA

Over a quarter century of service

PENNSYLVANIA TURNPIKE . . . Continued



WITH FOOTINGS POURED, reinforcing steel overlapped at crown, and natural rock bed chamfered down, workmen install first course of 3-ft acid-resistant lining in 405-ft arch culvert. Sketch (top) shows tough footing problems which preceded arch pours.

COPYCAT CREW makes up two wooden arch forms to exact dimensions of two Blaw-Knox steel sets. Fastened in place at 100-ft intervals, 25-ft forms simultaneously handled four jumps each.

wedged up to correct grade. Outer forms were likewise placed, fastened with Richmond Spreader Tys and stopped at both ends. In all, 1,754 cu yd of Class B concrete was required for footings, arch and wing walls. Final step was the installation of a 6-in. dia perforated tile underdrain, strung along outside the arch, slightly above spring line, supported by a foot of tamped clay, and backfilled with 2 ft of crushed stone. When fill is completed above the culvert, it will slope from zero at either end to a height of 89 ft above the transverse centerline. Hunkin-Conkey's general superintendent is Dewey Bardle, assisted by Jack Moore, and G. E. Riley is resident engineer for the Pennsylvania Turnpike Commission.

Take Care of Dry-Charged Batteries

UNDER NORMAL CONDITIONS, dry-charged batteries can be put into service immediately after electrolyte has been added, but certain precautions should be taken when such batteries are put into service during cold weather.

Don't expect to get even passable results by adding cold electrolyte to a cold case. Warm the electrolyte and the case separately, pour the electrolyte into the cell cases, then put the battery into service.

If facilities for warming the electrolyte and the cases are not available, an alternate method can be adopted. Add the cold electrolyte to the cold case and then put the battery on charge for 10 to 20 min at 12 to 15 amp. During this relatively short charging period the potential output of the battery will be increased far out of proportion to the total ampere-hours sent through it.

If no charger is available, hook the battery into the charging circuit of any vehicle or other power driven unit supplied with 6-v electrical equipment.

Such practices as adding extra strong electrolyte in an attempt to boost the initial output should be scrupulously avoided. Do not use an open flame to heat battery cases or electrolyte. Store them in a heated room until they reach room temperature. And never add warm electrolyte to a cold case.

Now— simplify tough PULLING jobs!

(Save the tool cost in one operation!)

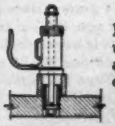
New—7 Complete Units • 10 to 100 Tons Capacity

SIMPLEX Re-Mo-Trol Hydraulic "Center-Hole" PULLERS

PUMPS AND REMOTE CONTROLLED RAMS

It's the "Center-Hole"* That Does the Job

An exclusive Re-Mo-Trol improvement! Ram plunger is tubular. A pull rod or screw inserted through the ram and secured to object being pulled is drawn in a straight line *directly through* the Ram—simplifies rigging and provides its own back-up.



Removing sleeve with Re-Mo-Trol, using supporting cage, pulling screw and back-up washer. Direct pull quickly draws sleeve from cylinder.

*On *Rams of 30-tons or greater capacity.*

DIRECT LINE PULL
No torque or side thrust. Requires up to 75% less effort—lets you do bigger, harder pulling jobs easier.

FEWER FIXTURES NEEDED
Simplifies rigging. The Re-Mo-Trol Ram acts as its own back-up and is self-supporting.

SAFER, HANDIER POWER
Operator is always at safe distance. Re-Mo-Trol can be used where lack of space or difficult positioning prevents use of self-contained jacks or pullers.

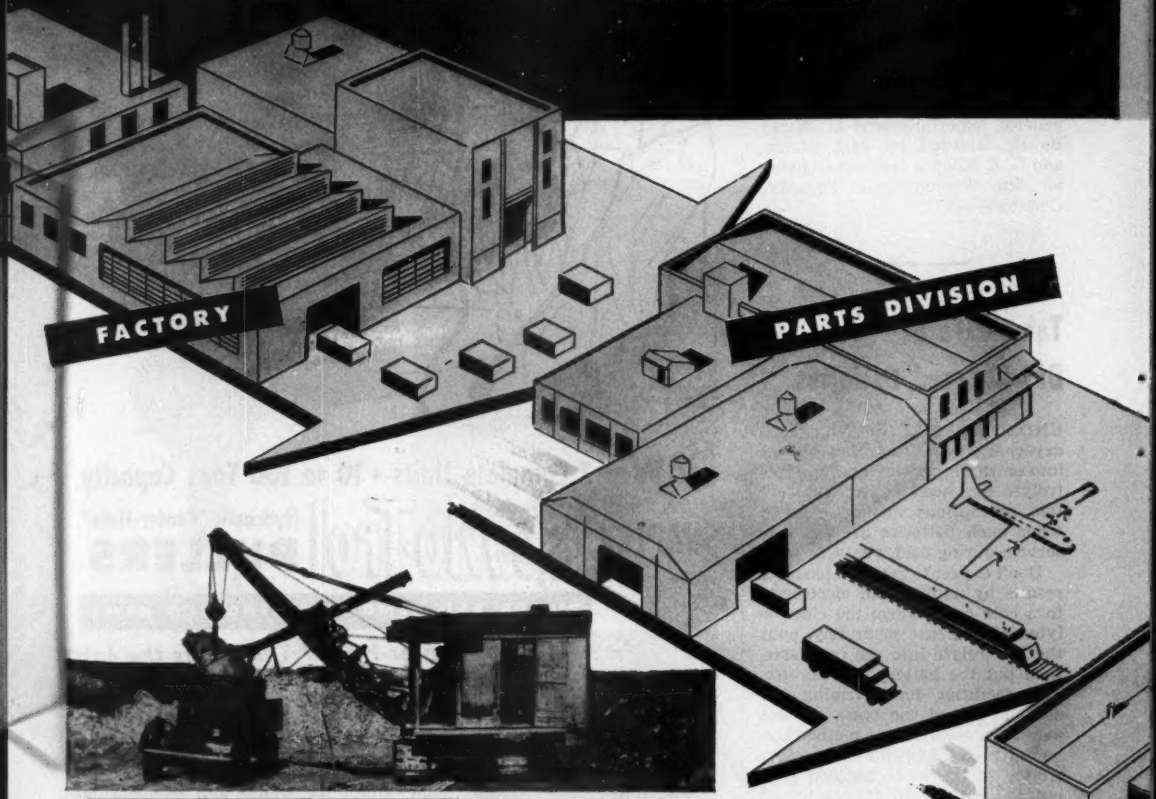
GREATER UTILITY
Light in weight, easily portable. Operates in any direction—up, down or sideways!

Simplex LEVER • SCREW • HYDRAULIC Jacks

Write for Bulletin: Hydraulic 51

TEMPLETON, KENLY & CO. • 1008 S. Central Avenue, Chicago 44, Illinois

97% OF LORAIN OWNERS ARE WITHIN 8 HRS. BY CAR OR 2 HRS. BY PLANE OF A THEW-LORAIN PARTS STOCK



NEVER AN "ORPHAN"—AT ANY AGE

Records show that for all Distributor's parts orders received, covering *any and all models* of Thew-Lorains, regardless of age, 81% of such parts are shipped promptly from the Parts Warehouse bins. . . . This is a remarkable record when it is considered that it includes orders for parts on machines 20, 25 and 30 years old. For example, recent shipments covered parts for a Type-00 Serial No. 2948 shipped in 1926; for a Lorain-75 Serial No. 3280 shipped in 1927; for a Universal Crane Serial No. 855 shipped in 1928. Frequently, to take care of these obsolete parts, special effort is required to run through a *single* piece . . . but it's all part of our policy that you can *always* get parts for *any* machine built by Thew-Lorain.

YOUR THEW LORAIN DISTRIBUTOR SPEEDS PARTS TO YOUR JOB

MONEY-SAVING PARTS "PACKAGES"

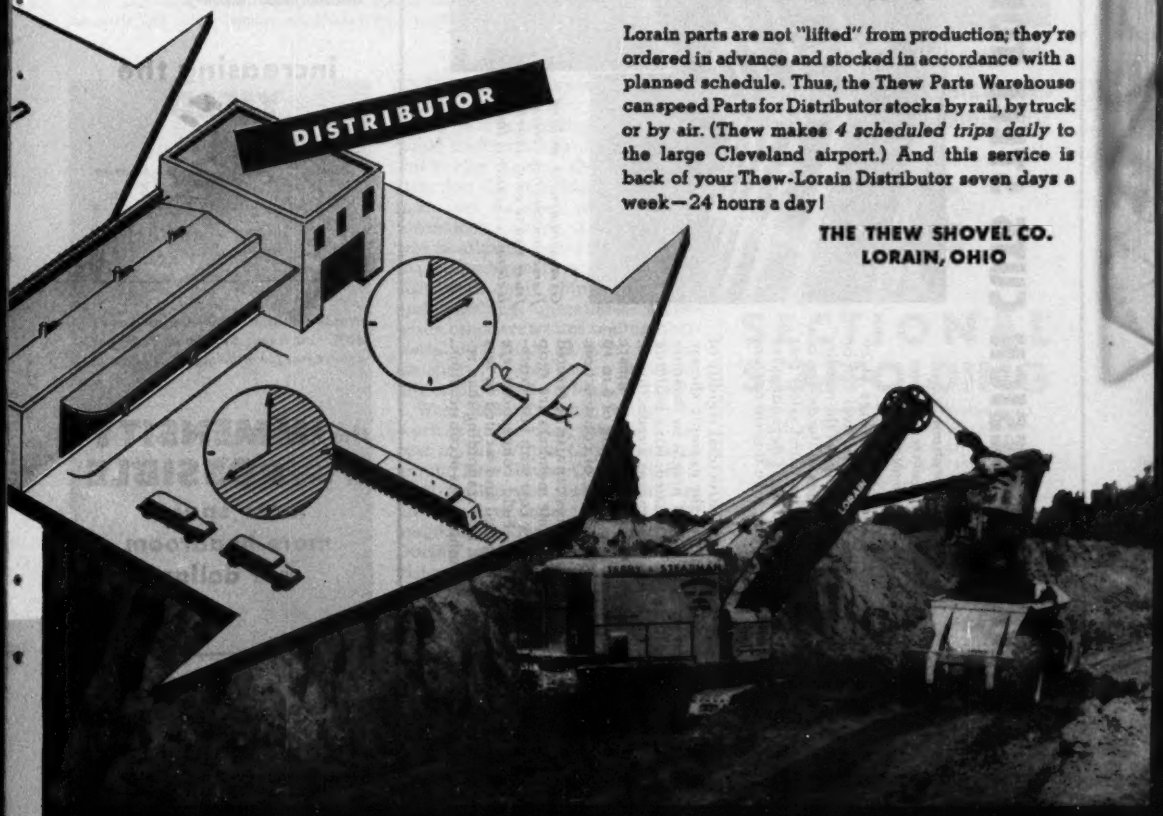
Among the parts your Thew-Lorain Distributor has available are a number of "package" items, consisting of commonly used parts. These "packages" contain all related and required parts for a replacement or change-over. Boxed as a unit, these "packages" are offered Lorain owners at *special money-saving prices*. Another *Service*—and another *Saving* you get when doing business with your Thew-Lorain Distributor.

IMAGINE!—**never** being **more** than 8 hours away from a source of Lorain parts... and in most areas east of the Mississippi, it's **never** over 2 hours. That's the kind of Parts Service offered you by the nation-wide organization of Thew-Lorain Distributors. Most of these Distributors have the parts in bins waiting for you. Records prove that **97% of Lorain owners** in the United States are **never more** than 8 hours by car from a Distributor's Parts Stock capable of filling **at least 70%** of their requirements right off the shelf.... And this percentage would be much higher if it were not necessary to furnish obsolete parts for machines often 25 to 30 years old. Here's just another important way Thew-Lorain Distributors back up your machine and keep it on the job producing profits for you.

HOW WE BACK UP YOUR DISTRIBUTOR...

There's sound planning behind the reasons that enable your Thew-Lorain Distributor to give you such excellent Parts Service. It comes from the Thew policy that "Parts" are not a "side-line" or a "necessary evil". Instead, Thew has set up a separate "business" to run its Parts Division.

It has its *own* location
(Elyria, Ohio—10 minutes from Lorain)
It has its *own* buildings
It operates its *own* machine shop
It maintains its *own* warehouse
It is directed by its *own* management
It does its *own* purchasing
It makes its *own* inspection
It handles its *own* shipping



Lorain parts are not "lifted" from production; they're ordered in advance and stocked in accordance with a planned schedule. Thus, the Thew Parts Warehouse can speed Parts for Distributor stocks by rail, by truck or by air. (Thew makes *4 scheduled trips daily* to the large Cleveland airport.) And this service is back of your Thew-Lorain Distributor seven days a week—24 hours a day!

THE THEW SHOVEL CO.
LORAIN, OHIO

THEW-LORAIN

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1951

WELDED DESIGN CUTS STEEL TONNAGE 20%

By David R. Graham
Consulting Engineer
Tulsa, Oklahoma

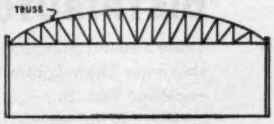
It has been shown that savings of 20 per cent in the tonnage of steel can be made by taking advantage of the rigidity of welded connections in the design of a structure. It may be stated safely that the cost of a building is dependent far more on planning than it is on current cost levels.

By utilizing the structural rigidity of welded frames in the example shown, six to eight feet of height in masonry walls can be eliminated. For a building of 80' x 120' this means a reduction in cost of $6000 based on $2 per square foot of wall area . . . a saving of 6 to 10 per cent in total cost of construction.

Welded structures can also be erected in less time. Frame members are shop fabricated at low cost with fast, downhand welding. Field connections are then bolted, guyed and welded in less time and with less scaffolding than required with other types of construction.

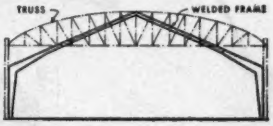
Gymnasium with welded frame construction. Needs fewer men to erect. Interior is cleaner . . . easier to light.

the ACTUAL



Traditional Design *costs $8 to $10 per square foot. Needs higher exterior walls and additional masonry.*

increasing the YIELD



Welded Frame Construction Saves 50%. *Cost is only $40,000 or $4.16 per square foot for building 80' x 120'.*

the IMMENSITY of the POSSIBLE

more space,
more headroom
per dollar

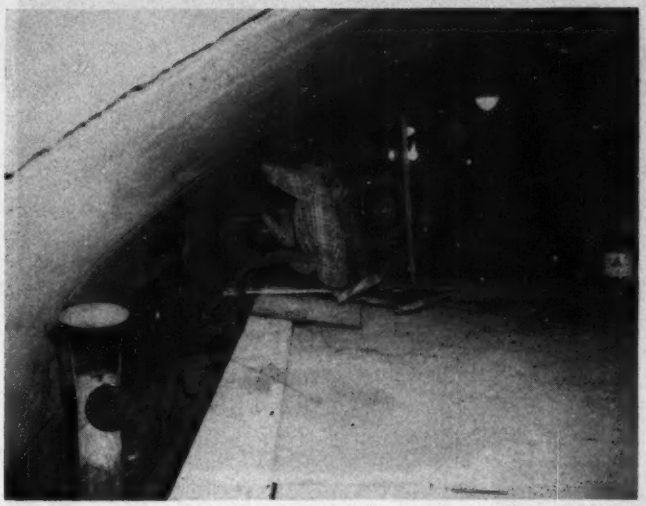
SEE HOW WELDED DESIGN BUILDS BETTER BUILDINGS

Studies in Structural Arc Welding free on request. Write on your letterhead to Dept. 172,

THE LINCOLN ELECTRIC COMPANY

CLEVELAND 1, OHIO

Leaky Tunnels Get First Aid



INSIDE 60-FT ENCLOSED SCAFFOLD, workmen apply sealing compounds in T-shaped slots cut in arch faces. Dome lights provide general illumination and salamanders counter dampness and cold. Supplies are hoisted from trucks below through trapdoors in deck.

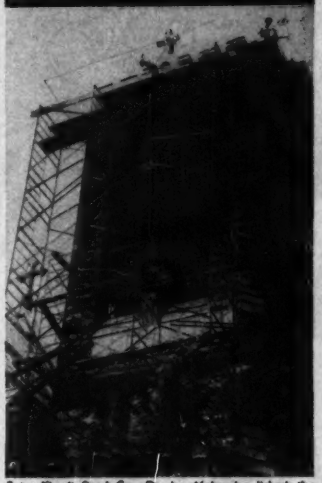
HEATED IRONS press three layers of joint sealer in place after frequent inspections and applications of quickset mortar, sand and seal primer. Final mortar cover completes job.

SEALING UP leaks in a vehicular tunnel is not a very difficult job, but to do it in freezing weather and while traffic runs through is something else again. DeFonce Construction Co. of Bridgeport, Conn., made up enclosed working platforms in the shape of inverted U's which allowed one lane of traffic to pass underneath while they proceed with their chipping, sealing and patching operations. Meanwhile other crews are sealing horizontal lift joints in four vertical air shafts; in this case with ventilation problems instead of traffic.

West Rock Tunnels, where the work is under way, provide a bypass on the Wilbur Cross Parkway around New Haven, Conn. Preliminary borings and tests determined the courses of underground streams and fixed the location of the tubes. During original construction, provision was made for vertical drains behind terra cotta walls. However, it is believed that blasting during construction dislodged rock formations enough to divert the streams and cause the eventual leakage through the concrete arches. No choice now but to seal the leaks—and in a hurry.

A 500-ft Gardner-Denver compressor at the portal supplies air through a 3-in. dia pipe running along gutter lines with manifolds

1500 FEWER PARTS!



Peter Kiewit Sons' Co., Omaha, Nebraska licked the problem of slow scaffolding erection by using Waco. JOB (above) Trinity Lutheran Church, Omaha.

1500 REASONS WHY CONTRACTORS WHO ARE *UP-TO-THE-MINUTE* USE

SECTIONAL SCAFFOLDING

In a job using 250 end frames, two leading brands of sectional scaffolding have 1500 more parts than WACO! Think of it—1500 more parts to transport—to handle—to lose. Another scaffold, which does not use the wing nut method of assembly, has 500 more parts than WACO! WACO is the simplest, safest, fastest scaffolding assembly—made possible by our patented SPEEDLOCK.

Write for prices and FREE catalogs showing load tests, typical adaptations, on-the-job photographs and speed of assembly tests.

WILSON - ALBRECHT CO., INC.
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Piles go down, down, down—double quick—under the powerful, positive impact of Super-Vulcan. Delivering twice as many blows per minute, it rams piles through dense soil while using 25 to 35 per cent less steam. At the same time, Super-Vulcan's low-velocity impact keeps pile heads damage-free.

This mighty hammer's sure, hard-hitting power gives penetration-plus, whether it's driving wood, concrete or pipe piles, steel sheeting or H beams. For unmatched versatility, it fits the same leads, uses the same accessories as Vulcan Single-Acting pile hammer.

Ease of operation, durability, compactness, minimum maintenance, dependability always—you get all these with Super-Vulcan. Write for details today.

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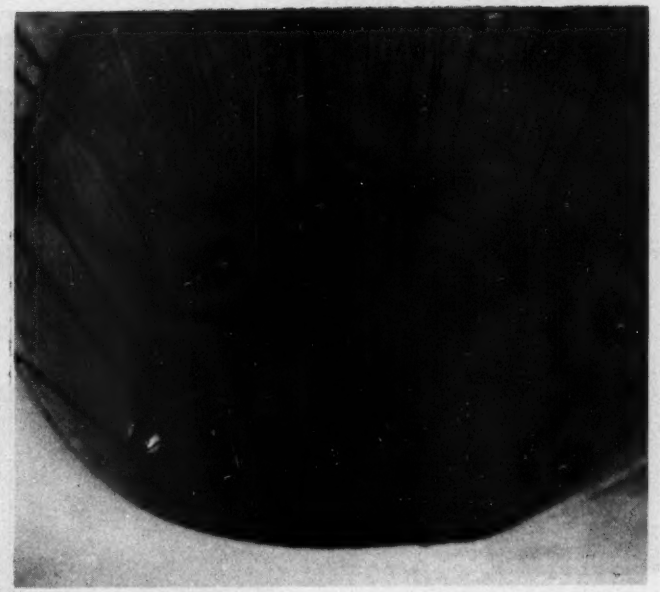

BIRDCAGE SCAFFOLDS facilitate sealing operation on horizontal joints in four air shafts. Crew in lower section chips out, top men seal up. Note reel of wire, payed out as rig descends. Air is supplied from top as far as half-way mark, then brought up from bottom.

every 75 ft. Using hand-operated stopers and chipping hammers, workmen follow the erratic courses of the cracks, cutting out a T-section. Top of the T is 6 or 7 in. across and bites 2 in. into the arch. The stem runs 6 in. deep into the concrete, 1 in. on either side of the crack—and then the water comes through faster than ever.

Immediately sides and end of the T-stem are coated with a quick-setting mortar mixed with Sikacrete. This liquid is mixed by hand, 1 part to 15 parts of water, and increases workability and density. A stronger mix provides anti-freeze protection as low as 24 deg. While this mortar is still tacky, sand is thrown on the surface to act as a bond for the next application. The seal is allowed to stand for 24 hr undisturbed, after which a careful search is made for any indication of leaks.

When a tight seal is apparent, Sika seal primer is brushed on, producing a tacky surface in 1 or 2 hr. As soon after this as possible, Igas joint sealer is applied. This heavy black mastic is cut into finger-thick strips with a heated knife or mastic shovel and inserted in joints in three separate layers, pressed fast with heated jointing irons. Igas is a plasticized asphalt that forms a flexible, yet positive seal. Final application is a mortar cover, which fills in the remainder of the T-shaped slots. If pressures exist behind seals, mortar cement is mixed with various strengths of Sika Quickest sealers. For seepage, liquid No. 4 is mixed undiluted with portland cement, producing an initial set in 1 min, final set in 5 min. Against heavy pressures Sika No. 2 is used, also undiluted with an initial set of only 20 sec, final set of 30 sec. Finally a small dummy joint is cut along the centerline of the repair strip to control any future surface cracking.

Vertical shafts in the West Rock Tunnels are no exception to the rules—they're cold! Water from the underground streams found its way through horizontal lift joints and changed into heavy ice formations which threatened to break free from their own sheer weight, knocking out ventilating fans and spewing ice into the tunnel roadways. First the contractor removed blowers and fan blades, and installed two Herman Nelson portable heaters to send warm air up into the shafts. These served a double purpose, making workmen more comfortable and preventing ice from forming during repair work. Originally a 13-ft dia shaft

(Continued on page 87)

Send for your easy-to-use Velvetouch Catalogs today

Here's your answer to the job of ordering replacement clutch plates, facings and brake linings. These catalogs give you, in handy ready-reference form, all the information you need to quickly select and specify the Velvetouch parts you want.

They're individualized catalogs . . . one for Caterpillar equipment, one for LeTourneau, one for Allis-Chalmers, and one for International . . . so that you don't have to plow through dozens of unrelated listings to find the items you require.

Just fill-in and mail the coupon, and we'll send your copies at once . . . together with a brief, interesting story explaining why Velvetouch all-metal clutch plates, facings and brake linings are "standard equipment with the leaders!"

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ROCKMASTER *blast by Fauzio Brothers at Lehigh Navigation Coal Company's Nesquehoning, Pa., stripping operation.*

No rock pile this . . .

but the high point of a blast!

THE machine-gun camera reels off twelve photos—one every 1/8 second—to "freeze" at its peak this typical ROCKMASTER "16" blast—three seconds after initiation of the shot. Here you see no wasted explosives gas, no wild rock—proof that ROCKMASTER "16" blasting can mean true *controlled force . . . controlled throw . . . controlled breakage!*

ROCKMASTER "16" may be the answer to *your* problems whether your job calls for blasting coal, rock, ore. The free ROCKMASTER "16" booklet shows how you can profit through the use of the correct numbers of the *sixteen* ROCKMASTER milli-second delay electric blasting caps teamed with the ROCKMASTER system of explosives choice and loading methods. Write for your copy. Our technicians will be glad to assist you in applying ROCKMASTER "16" to your operations.

Less Bark *More Bite*

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

Rockmaster: Reg. U. S. Pat. Off.

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END OF ENCLOSED SCAFFOLD is visible at west portal of twin tubes. Chipping platforms are 10 ft long, wheeled for quick moves. Sealing platforms vary up to 60 ft in length, are then pulled in sections approximately once a week by contractor's trucks.

(Continued from page 84)

had been hewn out of the mountain and was replaced by four parallel 6-ft dia concrete shafts. These are 192 ft high, curving at the bottom, with two serving each tube. Keyed lift joints are 8 ft apart and become the module for the contractor's scaffolds. These are two-level birdcages—one in each of the four shafts—with hand-operated painters' winches to control their heights. Lower-level crews chip and clean while uppers handle sealing job. Four snatch blocks are fastened to spider-web steel framing of the circular roof, one directly above each shaft. Through these a cable raises and lowers workmen in a boatswain's chair, with power supplied by a small hoisting engine outside the tower. A hand-crank telephone system connects the contractor's shack with tube and shaft crews and foremen.

Over-all repair estimates list 5,300 lin ft of patching in the twin tubes, 1,700 lin ft in shafts. Superintendent for the DeFonce Construction Co. is Ed Barber, working closely with Ted Van Dormolen, supervising engineer for Sika Chemical Co., Passaic, N. J., who supply the sealing products. For the Connecticut State Highway Department, E. T. Nettleton is district engineer; Jack Wilson, planning and programming engineer; and Walter Reynolds, job inspector, all under G. Albert Hill, state Highway Commissioner.

Steelman Heads Equipment Manufacturers

JULIEN R. STEELMAN

JULIEN R. STEELMAN, vice-president of the Koehring Company, Milwaukee, was elected president of the Construction Industry Manufacturers Association at the annual meeting held recently in Milwaukee in connection with the American Road Builders Association. CIMA is the manufacturers division of ARBA. Steelman, who has served several terms as director and treasurer for the manufacturers, succeeds Ralph Stiles of Austin-Western Co.

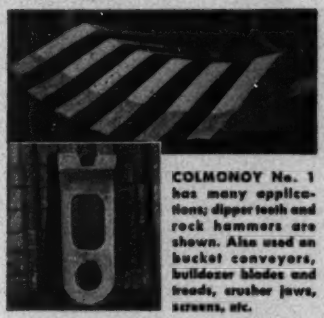
Other officers elected are: H. T. Reishus, International Harvester Co., Melrose Park, Ill., first vice-president; C. F. Boyd, Galion Iron Works & Mfg. Co., Galion, Ohio, second vice-president R. E. McCluskey, R. G. LeTourneau, Inc., Peoria, Ill., secretary-treasurer; Harold F. Hess, executive vice-president.

For the Toughest hard-facing jobs

Colmonoy No. 1

Maintenance-minded men know that when impact and wear conditions are really severe, the true quality of a hard-facing material becomes quickly apparent. The greater the wear factors —the greater the "spread" between poor and good material.

That is why, when users of COLMONOY No 1 were surveyed, it was found that they use it on the really tough jobs. They choose COLMONOY No. 1 because it is easy to apply and is unsurpassed for hard-facing carbon and manganese steel parts that must undergo severe impact and abrasion.



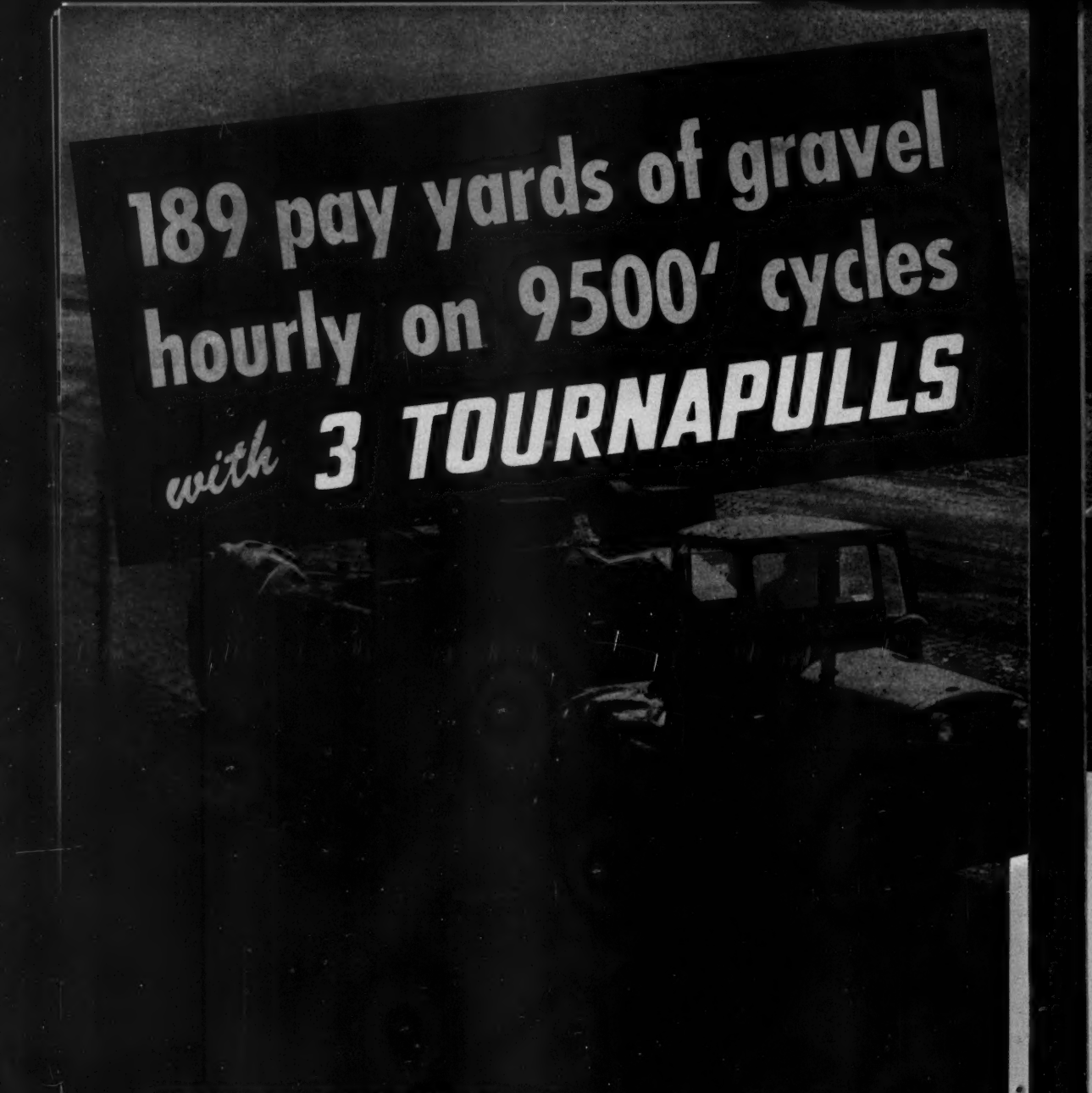
COLMONOY No. 1 has many applications; dipper teeth and rock hammers are shown. Also used on bucket conveyors, bulldozer blades and treads, crusher jaws, screens, etc.

COLMONOY stands for a complete line of hard-facing alloys—there's one for every need. Write for information.

WALL COLMONOY

HARD FACING ALLOYS

189 pay yards of gravel hourly on 9500′ cycles *with* 3 TOURNAPULLS



Loading gravel, each C Roadster heaps 9 pay yards in 55 to 90 seconds. Loading distance varies from 45 to 75 ft. Finger-tip electric controls made it easy for Clyde's operators to maintain cycle average of 8 min. 24 sec. on 9500-ft. round trip.

Mail today to: **R. G. LeTOURNEAU, Inc., Peoria, Illinois**

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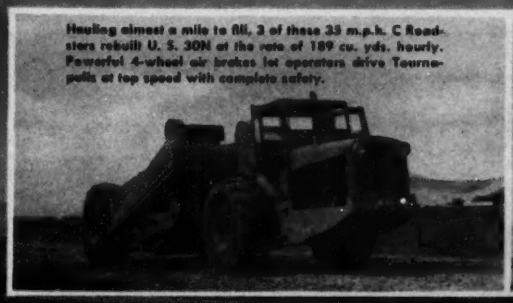
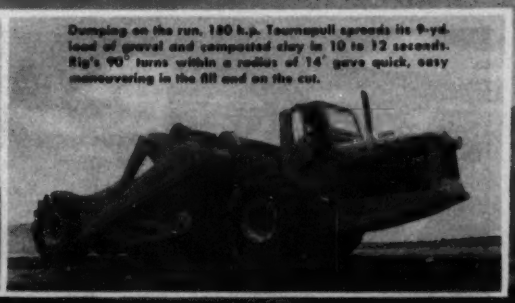
for complete information on new 210 h.p., 35 m.p.h. C Roadster-type Tournapull for use with:

- ☐ 13.5-yd., 16-ton Carryall Scraper
- ☐ 16.5-yd., 16-ton rear-dump Tournarocker
- ☐ 15-yd., 16-ton bottom-dump Tournahopper

LET



Hauling almost a mile to fill, 3 of these 33 m.p.h. C Roadsters rebuilt U. S. 30N at the rate of 189 cu. yds. hourly. Powerful 4-wheel air brakes let operators drive Tournapulls at top speed with complete safety.



Dumping on the run, 180 h.p. Tournapull spreads its 9-yd. load of gravel and compacted clay in 10 to 12 seconds. Rig's 90° turns within a radius of 14' gave quick, easy maneuvering in the fill and on the cut.

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off. Tournarocker, Tournahopper—Trademarks 8223

W. W. Clyde Construction Co. . . . of Springville, Utah, put dirtmoving on a high-speed basis when they widened and re-graded 10 miles of U. S. 30N near Cokeville, Wyoming. With 770,000 cubic yards of bank gravel and common earth to move on hauls averaging 1.2 mi. one-way, they assigned 85% of total yardage to a fleet of 3 new electric-control C Roadster Tournapulls and 2 veteran Super C Tournapulls.

On typical 9500' cycles through open traffic, the 3 rubber-tired C Roadsters moved the heavy gravel and compacted clay at the combined rate of 21 loads . . . 189 pay yards an hour. Pusher-loaded out of sidehill cut, each 180 h.p. Roadster picked up 9 pay yards of the high-void material in an average of 73 seconds . . . hauled 4750' to fill in 3 min. 37 sec. . . . spread in 11 seconds . . . and highballed back to cut in another 3 min. 23 sec. Each electric-control Tournapull averaged less than 8½ minutes for the complete round trip cycle covering 1.8 miles. Haul speeds, despite an altitude of 6200 ft., averaged 17 to 19.5 m.p.h.

These rigs showed a lot of other speed advantages which the contractors liked, too. When the job was started, the "C's" drove 65 miles to Cokeville in 4 hours. No waiting for trailers . . . no blocking . . . no shipping delays.

Like W. W. Clyde Construction Co., you'll find it pays to standardize on Tournapulls for lowest-net-cost-per-yard. Today's electric-control C Roadsters are good profit insurance against the future . . . assure you the pick of the jobs. Get all the facts from your LeTourneau Distributor, or write, today.

LETOURNEAU PEORIA, ILLINOIS — COST-PROVED Over 7000 Built and Shipped — **TOURNAPULLS**

FOR LOWEST NET COST PER YARD

HAULING 5,000 TONS A DAY—

and they throw in the shovel!

MINING coal near surface level is big business with the Badgett Stripping Corporation of Madisonville, Kentucky. And when it comes to shunting about their giant equipment, or transporting an output of 5,000 tons a day—they turn to GMC Diesel power *to save time and money.*

First the coal is stripped by large shovels or draglines which load it into bottom dump-haulers of 20-ton capacity. Then a shuttle of 14 dumpers, powered by GM 6-71 Diesels, maintains a constant flow of coal between shovel and washer—which is often miles away.

From time to time the giant shovels must be moved to new locations. That's where Badgett calls on GMC Model HDCWX 988, shown above giving a lift to a shovel with a mammoth appetite—*one that can scoop up five tons of coal at a single bite.*

Little wonder the Badgett people agree with Scotty McGaw, GMC dealer in Madisonville who sold them the equipment: "*These Diesels can haul bigger loads, haul them faster, and save you 56% on fuel costs alone—enough to pay for the new equipment in the first 300,000 miles!*"

Better check with your GMC dealer. Get the facts on these new 2-cycle Diesels—the modern power plants that give you *twice as many power strokes* per revolution as conventional 4-cycle types. You can't beat 'em for performance!

GMC Truck & Coach Division of General Motors

GMC

GASOLINE & DIESEL TRUCKS

½ TO 20 TONS

Your key to greater hauling profits

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CONSTRUCTION LABOR NOTES . . . By JIM CONNOLLY

Wage Guarantees in Housing Bill

The AFL Building and Construction Trades Department has forced contractors on 39 FHA-guaranteed projects to pay an additional $270,000 in wages to tradesmen. Richard J. Gray, department president, told the House Banking and Currency Committee that restitution was made between spring of 1950 and January 1, 1951, following specific complaints to FHA. Investigation of 30 similar projects may increase the final total by several thousands.

Contractors on FHA-guaranteed jobs, insured under Section 908, are required by law to pay prevailing community wages but differences of 25 to 50c an hour below scale have been found. Testifying in favor of President Truman's $3 billion defense housing bill, Mr. Gray urged inclusion of strict provisions to have contractors submit payroll copies to the Department of Labor, to require overtime pay of not less than time and one-half for work beyond 8 hr a day, and to make anti-kickback statutes applicable on these projects.

T-H Won't Help Bothersome Pickets

Each workman has the established right under the Taft-Hartley Act to strike and to perform "peaceful picketing," but he cannot interfere with non-strikers who go through the picket line, or he will immediately lose protection of the Act. That's a recent ruling by NLRB. (Standard Oil Calif. 91 NLRB 227)

At first a minority of the Board agreed that non-strikers should go around a picket line, contending that direct crossing through would invite argument and violence. This minority was outvoted, however, as was their opinion that a striker should not be penalized for using force if he was provoked by non-striker's language.

So. Calif. Carpenters End Strike

Peace reigns once more in 12 Southern California county districts after a long series of hearings and an equally long strike on the part of the carpenters. It all started way back last July when six basic trades were offered long-term contracts providing periodic wage boosts totaling 13c an hour, but the carpenters rejected theirs. They were to have received an 8c-an-hour increase on November 1, 1950, bringing their rate to $2.28, and another 5c on May 1, 1951, to run for a year. The rejection automatically voided proposed contracts with ironworkers, cement finishers, engineers, teamsters and laborers.

If the contract had been accepted, the AGC would have withdrawn its $15 million damage suit against the carpenters and 40 independent non-member contractors, the AGC and Building Contractors' Association of California charging that the independents disrupted the basic wage structures by paying wages in

(Continued on page 92)

Construction Labor Briefs

Mere request of union for illegal discharge of employees, complied with by contractor employer, is an unfair labor practice on the part of the union, NLRB rules (17-CA-234). Board states that the union "caused" the discharge even though it did not use economic pressures to compel same.

* * *

The carpenters' local in Paducah, Ky., voted to raise its initiation fee from $50 to $100 a few days before the announcement of a $300 million AEC plant there, but national headquarters in Indianapolis heard about it and promptly rejected the increase. Two months earlier the plasterers' local had raised its entrance fee by $69 to a new high of $125, but few, if any, plasterers will be needed on the project. All others remain the same, from $125 for plumbers down to $25 for truck drivers.

* * *

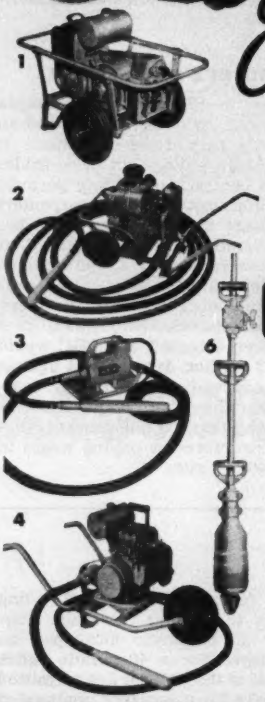
Basing wage rates on those now in effect in Toronto and Niagara Falls, 17 AFL international unions agreed with the Hydro Electric Power Commission of Ontario for a 44-hr straight time week on Niagara Falls power development job. Skilled tradesmen will be imported from Great Britain and must join unions here.

A federal district court ruling states that under the Wage-Hour Law an employer must pay an employee for a 40-minute lunch period if the latter is not permitted to leave his machinery unattended during the period, but must stand by in case of breakdowns.

* * *

Howard McSpedon, president of the New York City Building and Construction Trades Council, returned recently from attendance as a workers' representative at the third session of the Building, Civil Engineering, and Public Works Committee of the International Labor Organization at Geneva.

MANUAL VIBRATING of concrete at side forms. Saves the better part of two men's labor. Mounts on any modern finisher, Jackson Vibratory Paving Tube or Spreader. Employs two or more vibratory units that are simultaneously lowered into or raised from the concrete by the finisher operator. Units operate close to forms or reinforcement without fouling — ride over any obstruction encountered. Will not penetrate into sub-base. Assures thorough compaction regardless of speed of finisher or spreader . . . no spots missed. Long-wearing, trouble-free.



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1. Power Plant used with Compactor and Screed, 1.25 KVA. Others of 2.5 and 5 KVA capacity — all produce both single and 3-phase 110 v. 60 cycle AC and have generators requiring no maintenance or adjustment. 2. Hydraulic vibrator with time-saving 50' reach. 3. Powerful, easy-to-handle electric vibrator — shafts up to 28'. 4. Finest of engine-driven flexible-shaft vibrators. 5. Revolutionary, fast, granular soil vibratory compactor. 6. Heavy-duty mass construction vibrator — a "must" on dams, etc. 7. Electric vibratory screed — most productive of all screeds for municipal paving, highway widening, etc. Write for "Pocket Guide" describing the entire line.

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ELECTRIC TAMPER & EQUIPMENT CO.
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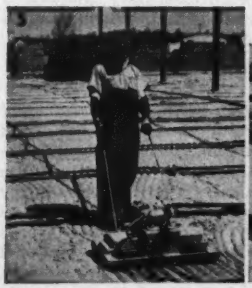

excess of the agreed scale, and that the carpenters breached their agreement by striking against AGC members.

Next step was a compromise carpenter wage of $2.35, offered on December 1 to end the long drawn out strike, and the members as a whole accepted it. A die-hard faction opposed it, however, and brought the matter to international headquarters to determine if the referendum would be binding on the few who still disagreed. The answer was quickly returned: No referendum needed since the majority had accepted the terms. Other agreed rates include ironworkers and cement finishers, $2.38; engineers, $2.30; teamsters, $1.83; laborers, $1.75.

Elections Again in Limelight

The question of elections to determine bargaining agents in the construction industry cropped up again with petitions to NLRB on the part of AFL plumbers' locals in Baltimore, Md., and Olean, N. Y. Petitioning tradesmen contend that elections will help determine allocation of work to proper unions, and certification would automatically give them the right to engage in secondary strikes if and when a contractor refuses to assign them their usual jobs. Other trades, all employed by contractors' associations in the cities, disagree and say that jurisdictional disputes are being settled peacefully and determination elections will only create chaos.

New Building Trades Secretary-Treasurer

At the Executive Council winter meeting in Miami, Joseph D. Keenan was elected Secretary-Treasurer of the Building and Construction Trades Department, AFL, to succeed the late Herb Rivers. Mr. Keenan takes over the job well armed with experience, leaving his post as director of Labor's League for Political Education of AFL. In 1945 he was appointed labor advisor to General Lucius Clay and helped reorganize Germany's labor unions. Rules prohibit two members of the same union serving on the Executive Council, so Daniel W. Tracy, electricians' president, resigned in favor of Keenan and was replaced by Peter Fusco, representing laborers.

The UNIVERSAL 293Q TwinDual PACEMAKER

gives you these EXCLUSIVE Profit-Making Advantages

- TwinDual Roll Crusher
- Three separate crushing operations
- Primary and Secondary on single truck
- Only one plant to move instead of two
- Only one power unit to service
- Flexibility for rock or gravel
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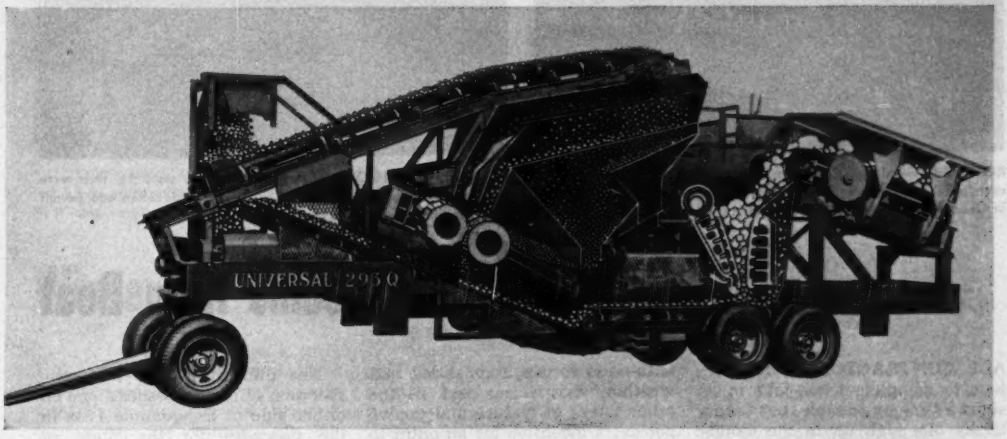
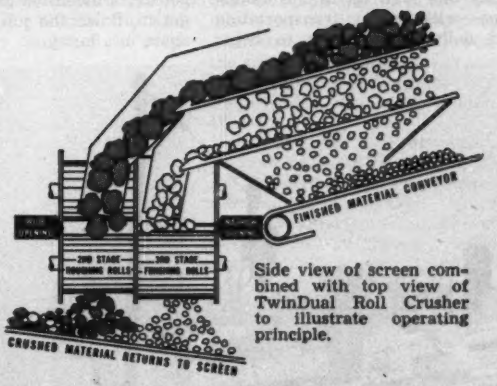
- Top production



PIT OR QUARRY — rock or gravel. Name your operation. The TwinDual Pacemaker sets new standards for profitable hour after hour tonnage at low cost per ton. Three crushing operations with Universal's exclusive TwinDual Method provide top capacity, divide the load between three crushing stages. Permit a more favorable ratio of reduction resulting in longer crusher life, less maintenance and better quality finished product.

There is much more to the profitable TwinDual Story. Facts are yours for the asking. Bulletins U520 and U501 will give you detailed information.



Side view of screen combined with top view of TwinDual Roll Crusher to illustrate operating principle.

UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

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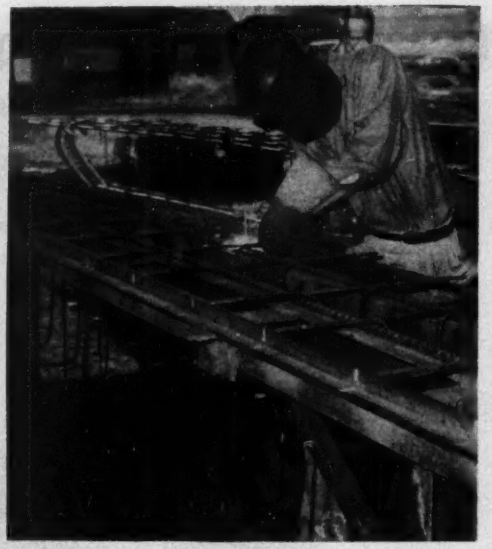
ROOF-SLAB BEAMS for State of Washington's snowsheds were precast in Seattle pipe yard while walls were erected at job sites high in Cascade mountains. Two snowsheds called for 720 beams.

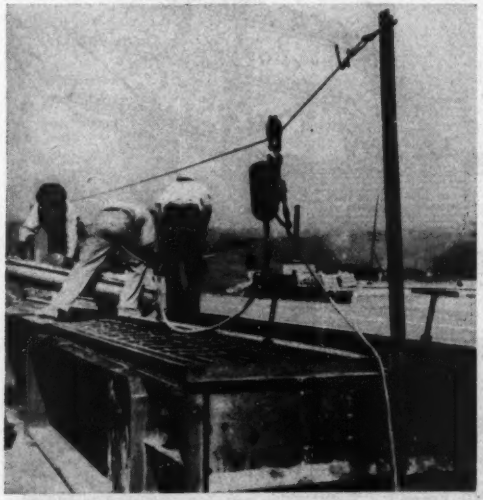


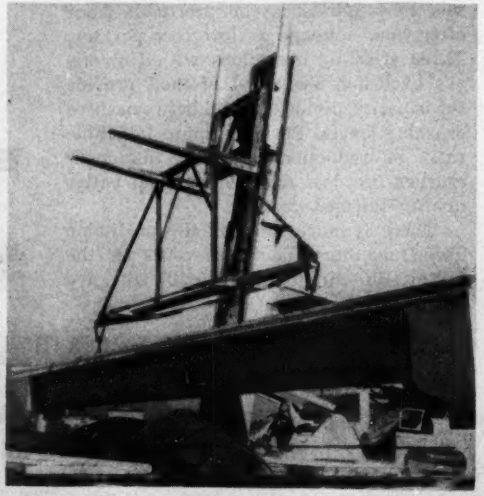
STIRRUPS MATCHED up with chalk marks on steel jig, then were tack welded to upper reinforcing to prevent dislocation and permit easy handling by crane. To make insertion easier . . .

Precast Roof Beams Help Beat

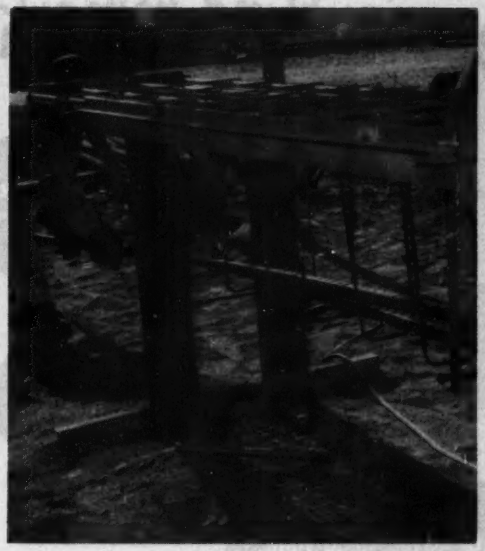
ALL CONTRACTORS ARE anxious to complete their jobs in as short a time as possible, but take a tricky one high up in the mountains—with traffic, transportation and delivery problems to begin with—add to this, rock slides, bad weather, snowstorms and all the other tricks of Nature and you've got extra incentive for an outfit to get in, finish the job, and get out again in a hurry.

This difficult project was construction of two snowsheds, one on either side of Snoqualmie Pass in the Cascades for the State of Washington's Department of Highways. Located in particularly bad

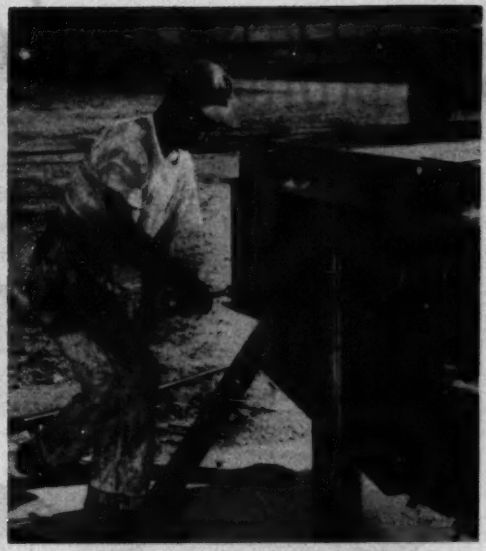




TRANSIT MIXERS had access on either side of forms; poured center beam first, then outers. Note Mall vibrator traveling full length of form on pulley and cable. Anchor bolts, held in place with T-wrenches, facilitated moving and final placing. Heavy-duty Gerlinger fork lift (right) with special lifting frame moved beams after steam curing under canvas doghouses.



. . . LOWER BARS, 1¼-in. square, were eased over rollers located just above stirrup line. Each beam, 2½ ft wide on top and almost 40 ft long, weighs 9 tons and took 3 1/3 cu yd of concrete.

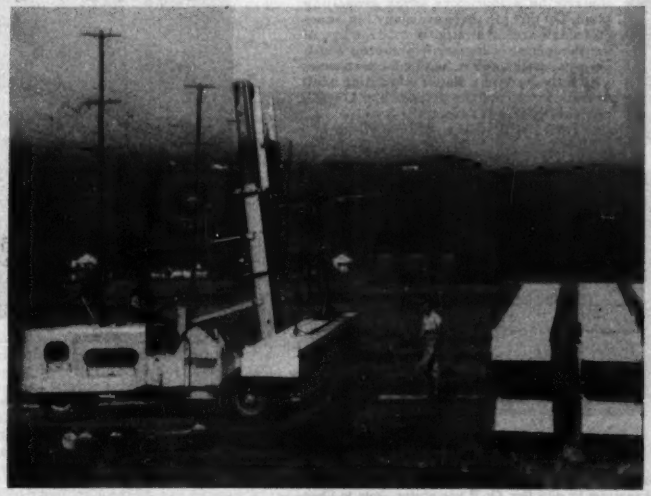


RATCHET WRENCHES speeded assembly of steel forms by tightening bolts on tierods passed through banks of five beams. Four such sets permitted forming, pouring, curing, stripping cycle.

Winter on Snowshed Construction

slide areas, each will provide a two-lane covered roadway to keep vital U. S. Highway No. 10 open throughout the winter. All too often in the past, slides of rock, snow, brush and debris have covered the road, closing it from two to three hours to several days at a time.

Two Bellingham, Wash., contractors, C. V. Wilder Co. and Gaasland Co., combined to erect the snowsheds, one 500 ft long at Lake Keechelus and the other 1,300 ft long at Airplane Curve. To beat Old Man Winter to the punch they split the job into two phases —construction of walls and road at the site, and simultaneous precasting of 720 roof slab-beams, which they sublet to Seattle Concrete Pipe Co.



FINAL STEP in precasting was storing, two high, in nearby field until needed on job, 60 mi away. Since supporting walls were built in 100-ft sections, roof-beam adjustments could only be made at 100-ft intervals also, demanding precise casting and close tolerances.

Crews of the combine widened existing roads to four lanes, permitting traffic to bypass construction operations; then quickly erected counterfort retaining walls, columns and arches on a difficult combination of vertical and horizontal curves.

Natural Light and Air

Inner walls along the face of the pass are 15 in. thick and 28 ft 3 in. high. They sit on footings 19 ft wide and are tied in to 2-ft thick counterforts on 10-ft 2 in. centers. Outer faces are made up of 2-ft square columns on 20-ft centers, capped with arch beams which support the lower end of precast roof slabs. These open bays provide sufficient illumination, ventilation and traffic visibility.

To speed forming and stripping,

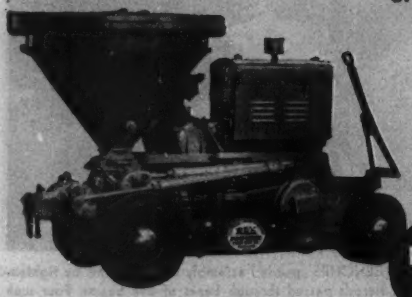
(Continued on page 97)

You'll profit from these "cutting remarks"

. . . on how Rex Pumpcrete® and pipe line flexibility cut concrete placement costs on buildings of all types.

pumpcrete CUTS direct labor cost
Concrete is transported, elevated and placed in one operation. No rehandling . . . no buggying needed.

pumpcrete CUTS preparatory costs
Pumpcrete and pipe line flexibility eliminate need for many access structures such as road building and maintenance . . . towers and scaffolding, etc.



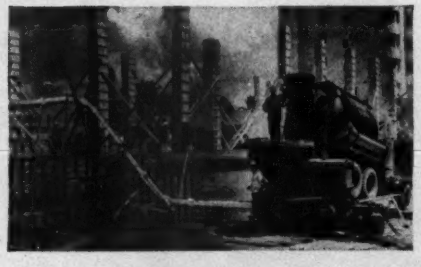
pumpcrete CUTS "dead time"
Delivers concrete in a steady flow. Often eliminates overtime caused by crews having to wait to avoid interfering with placement operations.

Just Look at these examples!

pumpcrete CUTS non-productive moving time
No need to move mixing equipment from place to place. Spot Pumpcrete in the one best location for concrete delivery.

Here Pumpcrete is being used to place all concrete on a four-story steam generating plant. On this job there are many big pours in a small area. An important advantage of the Pumpcrete is its steady pumping which permits small crews to handle large volumes with little dead time. Better scheduling of all operations on the job is possible. Overall efficiency is greatly increased.

On this job the Pumpcrete, being charged by a Rex Hi-Discharge Moto-Mixer, pours the flooring of a large apartment building. An important advantage here was the fact the steel setting and forming crews were able to erect the tall column forms shown without interference from the concreting crews pouring the slab. Columns were poured when second floor was constructed.



Nine stories high . . . 160 feet up! That's how high the Rex Pumpcrete lifted the concrete on this building job. Pumpcrete is ideal for pouring floors on buildings several stories high. As one floor is completed, the pipe line is just extended on the job. Expensive preparatory tower work, buggies and buggy runs and costly moving of such equipment are eliminated.

Ask your local Rex Distributor to give you the "cutting details" of concrete by pipe line. Or, if you prefer, write to Chain Belt Company, 1664 W. Bruce Street, Milwaukee 4, Wis.

CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY . . .

PUMPCRETE IS THE REGISTERED TRADE-MARK OF CHAIN BELT COMPANY

(Continued from page 95)

Universal Form Clamp Co.'s Uni-Forms were used throughout on walls, beams and columns with as many as 18 reuses. A single Mixermobile, equipped with 55-ft tower, poured the necessary 10,000 cu yd of air-entrained concrete for the structure, with elephant trunks set up at each counterfort in the larger walls. Average daily pour was 250 yd.

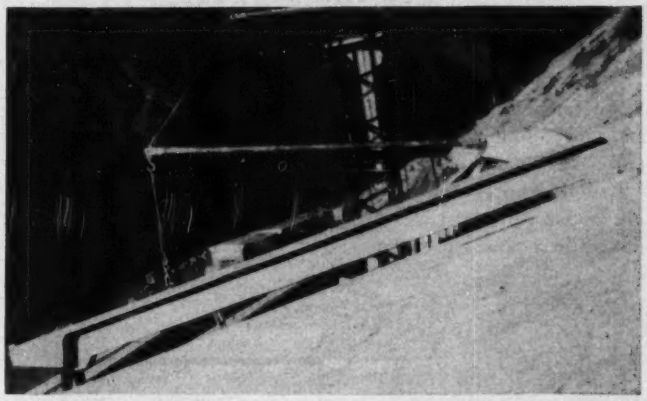
Beams Cast and Stored

Meanwhile, unique precasting of roof beams was going on at an equally rapid pace, as shown in the photos. Four sets of steel forms were made up in the pipe company's yards, each containing five beams. These permitted a constant forming, pouring, curing, and stripping cycle, after which beams were stored two high by a heavy fork lift carrier until ready for transportation to the job site for quick placing by crane.

These sheds are the first of many proposed in this and other sections of the state, and will be under close study during adverse weather, serving as models for future design and construction.

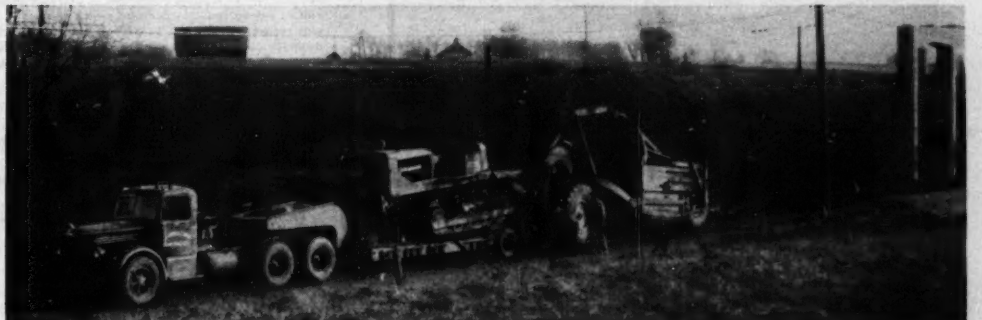
E. V. Shields was general superintendent for the Wilder-Gaasland combine, assisted by Sam Lowry. Mac McDaniels was project engineer and Millard Smith, carpenter foreman. William A. Bugge is director of highways for Washington State, George Stevens is bridge engineer. Job resident engineer is Charles E. Chapman, under supervision of Tom Doyle, district engineer at Yakima.

MEANWHILE, CONTRACTORS doubled highway width for traffic; then erected inner counterfort walls and outer column-and-beam arrangement in two worst slide areas. Lake Keechelus shed, shown here, is 500 ft long; other is at Airplane Curve, runs 1,300 ft.



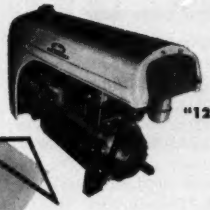
WITH ECCENTRIC LIFTING BAR set for proper angle, crane gingerly set beams in place. Note ¾-in. steel dowels in arch beams. These fit into 2-in. holes on underside of beams; were grouted-in after placing. Early advent of winter snowstorms put off slab pours until Spring.

Trailer Totes Tractor; Tows Scraper



TRAILING SCRAPERS has become a common occurence on many lengthy highway jobs. Here S. J. Groves & Sons Co. of Minneapolis shows how it's done on their section of the New Jersey Turnpike. The tractor, in this case an Allis-Chalmers HD-19, is run up on a low-boy trailer, leaving the LeTourneau Carryall scraper out on the road. With shorter combinations, front scraper tires end up on a timber frame directly above multiple rear duals of trailer. Two things to remember: Loosen scraper wheel bearings to prevent damage from high speed, and increase tire pressures to prevent continuous flexing during transfer.—Photo by Tom Henry

YOUR job is Well-Powered when it's Ford-Powered



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Ford "337" POWER UNIT

FORD POWER IS RIGHT 3 WAYS

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FORD "226" (six cylinders, 226 cu. in. displacement) —hoists . . . pumps . . . feed mills . . . generator sets . . . material handling equipment . . . earth boring machines . . . airport tractors . . . bituminous spreaders

FORD "239" (eight cylinders, V-type, 239 cu. in. displacement)—portable sawmills . . . feed mills . . . hoists and cranes . . . pumps . . . generator sets . . . electric stand-by units . . . positive displacement pumps . . . compressors . . . concrete mixers . . . straddle trucks

FORD "254" (six cylinders, 254 cu. in. displacement) —road machinery . . . hoists and cranes . . . pumps . . . feed mills . . . logging equipment . . . portable sawmills . . . jetting pumps . . . frost protection machinery . . . drag lines . . . earth boring machines . . . rock crushers . . . generator sets

FORD "337" (eight cylinders, V-type, 337 cu. in. displacement)—logging equipment . . . portable sawmills . . . drag lines . . . railroad switch engines . . . coal recovery machines . . . asphalt plants . . . rock crushers . . . snow removal machinery . . . feed mills . . . road machinery . . . generator sets . . . hoists and cranes . . . pumps

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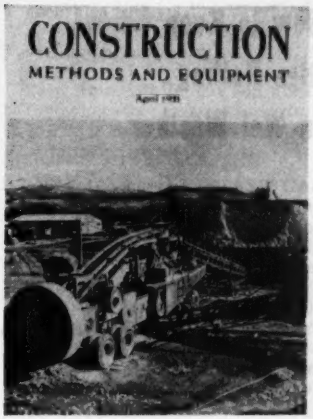
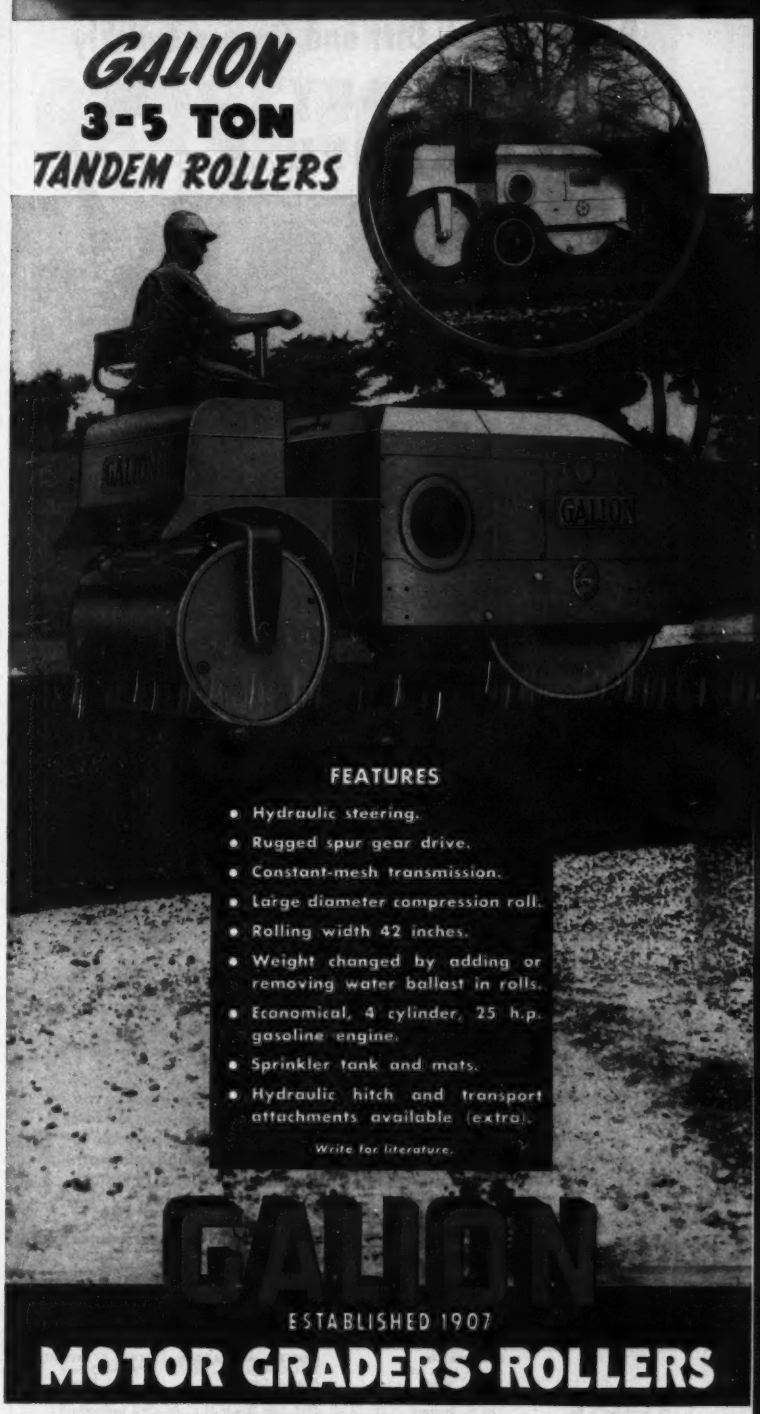


On the Cover . . .

IN PREPARATION for spring paving jobs in their home town of Boise, Idaho, Morrison-Knudsen Co., Inc., processes and stockpiles gravel baled from the Boise River. Their Cedarapids Master Tandem crushing plant takes cobbles up to 8 in. and reduces them to ⅝-in.-minus and ¾-in.-minus, producing about 125 tons per hr. The unit is equipped with a 10x36-in. jaw crusher and 40x22-in. roll crusher, both fitted with roller bearings, and a 48-in. by 12-ft double-deck horizontal vibrating screen.

Motors in Belt Pulleys

Morrison-Knudsen's Master Tandem plant is unique—the conveyor drives have no V-belts or counter shafts with universal joints. Instead, conveyors are driven by gear-reduction electric motors inside the head pulleys. M-K had Iowa Manufacturing Co. supply the plant without conventional drives, then fitted it as an all-electric portable unit at Boise. A 50-hp motor over the return conveyor and ahead of the raff wheel drives the jaws, a 100-hp motor on front drives the rolls, and four Schrock motorized head pulleys drive the conveyors. Of these motorized pulleys, 10-hp units operate the 30-in. feed and 30-in. finished material conveyors, 5-hp units run the 24-in. return and 18-in. fines conveyors. Electricity for the entire plant is supplied by a separate portable power unit on a trailer, and the plant can be set up in only 16 man-hours. This is the rig's third job. Work at Lucky Peak Dam and the Arco (Idaho) atomic plant preceded it.



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High Pressure Cold Water—*300 gals. per hour at 250 lbs. pressure for cold rinse or rapid removal of caked mud and dirt.*

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Low Pressure Wet Steam—*for de-gassing tanks & heating purposes.*

Low Pressure Warm Water—*up to 300 gals. per hour for hand washing trucks and equipment.*

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The MALSBARY 250 blasts away mud, dirt and grease before their abrasive, corrosive action slows down hourly output and causes expensive repairs. With a Model 250 Fredrickson & Watson Construction Co., long-time users of Malsbary cleaners, cleans the tractor shown above in 2 hours or less; conventional steam vapor cleaners require 4 to 8 hours.

Investigate the 250 Cleaner NOW. It has capacity for 5 hours continuous cleaning. Simple, rugged, dependable construction; free from trouble-making gadgets. Oil or gas fired; stationary, portable or trailer mount. Ask for a demonstration on your job. Call our representative TODAY for name of nearest Malsbary distributor, or write us.

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How to Keep Rigs Rolling In Wet Weather

BAD WEATHER is one of the most important factors contributing to down-time of heavy equipment. There are, however, several things earthmoving contractors can do to reduce weather down-time and keep their equipment rolling throughout the rainy season. The following practices are recommended by field engineers of R. G. LeTourneau, Inc.

Pre-Rain Procedures

Keep the haul road smooth, and fill in large holes or pockets that temporarily hold or impound water. Assure good drainage by constructing adequate ditches and culverts, and keep these clear of obstructions.

If it looks like rain, smooth up the fill, cut, borrow pit or haul road at the end of shift. This can be done easily by a scraper dragging its blade on the return trip, or by back blading with a dozer.

Watch your drainage in the borrow area. Load down hill in the direction of lines of natural drainage. Keep the area free of pockets or low spots that encourage ponding. Eliminate ruts by smoothing the borrow pit, or by going from the borrow to the haul road over different routes.

Rooters are useful for obtaining bigger loads. But, if conditions are wet or if it looks like rain, don't root material too far ahead of the scraper. Keep the area as solid as possible. Loose, rooted areas absorb water rapidly and get too wet to work. Settle for smaller loads rather than shutting down entirely.

For good drainage, keep cuts low at the sides and high in the center. Good operators construct cuts in this manner anyway, primarily because it's the only right way to maintain proper slopes.

On the Fill

Keep the fill compacted as solidly as practicable. Do this by spreading the loads in thin, even layers. Then compact them by changing the path of travel of each load. During construction, fills should normally be kept high on the shoulders and low in the center. But, at the end of the shift, during wet seasons, it's a

good idea to level the fill and give it some crown for drainage. If working in rough, hilly country, it's easy to cut a few ditches and thus keep water off the cut and fill. By following the proper procedures before it rains, you can save a lot of job down-time.

Post-Rain Procedures

Start back to work earlier after a heavy rain by putting dozers and graders to work, a few hours ahead of other equipment, to skim off mud, and drain and fill water holes and ponds. If you face a penalty for late job completion, you can get to work faster by wasting, stockpiling, or spreading out to dry, the materials too wet to go on the fill. If worth saving, these can be picked up later a little at a time along with drier material. By doing this, too much wet material won't be placed in the fill at any one time.

On the Haul Road

Where showers have wet the top inch or so of haul road, making it dangerous for rubber-tired units to work at top speed, pick up a load of sand or cinders or get some dry material out of the cut or borrow area and spread thin layer over the haul road. If the road is too long to make this method practicable or if wetness has penetrated 3 or 4 in., the surface can be sliced off with scrapers. Heavy grades on the average construction road get slippery faster and stay slippery longer. For best performance, reduce grades to a minimum. Slippage decreases travel speed, reduces the size of load that should be carried, makes for hazardous operation and can shut down the job altogether. Eliminate slippage and get top speed and higher yardage. Soft spots that bog down machines can be patched by mucking them out and filling them with dry dirt from the cut.

Tires Help, Too

Adjust tire pressures within recommended load-carrying limits for best job operation. Lower air pressure and reduced speed can be used where underfoot conditions are soft, spongy and rubbery to extended depths, and where flotation would be the first consideration. Use higher tire pressures to cut through shallow mud to get to firmer footing.

Following these procedures will help keep construction equipment working in bad weather.

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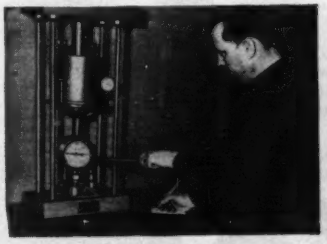
GAUGE-EQUIPPED
Blackhawk Jacks

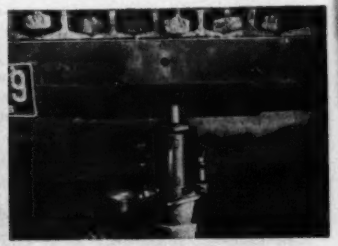
Pre-stressing Concrete with "Measured" Hydraulic Power

Above — a Blackhawk 50-ton "Porto-Power" Hydraulic Jack — *equipped with a gauge* which registers pressure exerted in pre-stressing cellular roadway slabs for a bridge. On many jobs, such low-cost Blackhawk equipment takes the place of large, costly, improvised arrangements.



Laboratory Testing

The heart of this testing device is a Blackhawk Gauge-Equipped Hydraulic Jack. It's being used for a penetration test on road-building material. Gauge registers "lbs. total load" exerted.



Field Testing

Here's a popular set-up for testing the weight-bearing characteristics of soil prior to construction work. This Blackhawk Gauge-Equipped Jack is pushing against a load of ballast.

Blackhawk Gauge-Equipped Jacks (up to 100-ton capacity) do these and many other jobs

- Test fracture points of materials
- Check weights of cumbersome members
- Press plastics etc.
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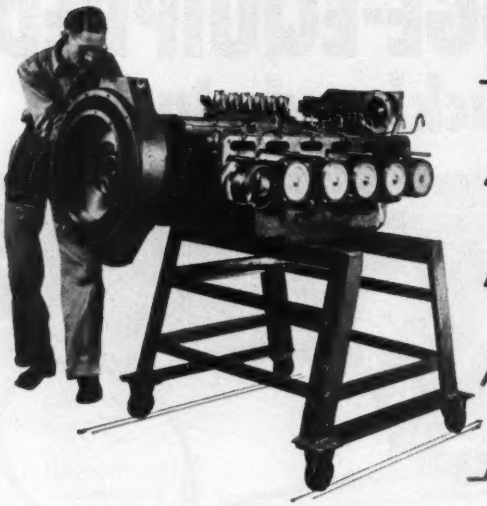

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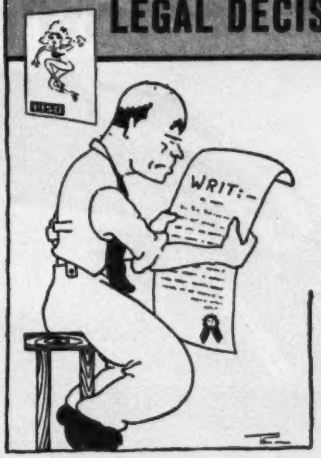
LEGAL DECISIONS CONCERNING CONSTRUCTION



The Omitted Word

HOW THE OMISSION of a single word in the endorsement of a promissory note led to a law suit may be found in the official records reported in the case of First State Bank vs Cox in 213 N. W. 290, where the evidence showed that a debtor gave a note payable to the "West Wisconsin Construction Company." The president of the Company endorsed the note "Wisconsin Construction Company," signed it as president, a Wisconsin bank took the note for value and sued the maker.

"You cannot be a holder in due course, for the endorsement omitted part of the proper title of the payee company," the maker contended, but the Wisconsin Supreme Court, in the case referred to, ruled in favor of the bank.

"We hold the endorsement, having, in fact, been made by the payee was a valid endorsement, though there was a misdesignation," the court reasoned.

The Warranty Deed

THE CONTRACTOR had bought a large building lot, and the agreement of sale specified that the seller would convey the property to him by warranty deed within three months from the date of the agreement. At the expiration of the three months period the seller offered the contractor a warranty deed of the land in question, signed by John Smith and wife.

"I don't know John Smith in this transaction — my agreement was with you," the contractor protested.

"Smith is the owner of the land on the public records, I have a personal agreement with him to deed the land to whomever I name so this deed gives you an absolutely good title," the seller pointed out.

"That may be true," the contractor demurred, "but, according to the agreement of sale, I was to have a warranty deed from you, not from John Smith, and unless I get it, the sale is off."

"I'll sue you for damages for breach of agreement," the seller threatened.

"Sue away," the contractor told him, the seller sued in the Kansas Courts and the decision was in the contractor's favor in the case of George Paul Co. vs Shaw reported in 86 Kansas 136.

"The contract did not say in so many words that the seller was to execute a deed; it did, however, recite that the seller was to 'give' the contractor a warranty deed. This fairly implied that the deed was to be signed by the seller, and gave the contractor a right to insist that however good the title might be upon the record or in fact, he should be protected against any subsequently developed defect by the personal guaranty of the seller," said the Court.

"Under this contract the buyer was entitled to a deed containing the personal covenants of the vendor. He could refuse to accept the warranty of the third party, for the value of the covenants depended upon the responsibility of the covenantor," was the reasoning of the Missouri Courts, in laying down the same rule.

The courts have also ruled that where several parties agree to convey land by a warranty deed, the buyer may demand a warranty deed signed by all, and the mere fact that the party offering to sign the deed is able to give a good title does not change the rule.

"The buyer was entitled to have all the names to the deed, so that he might proceed against all for the purpose of having a decision upon his right to some redress, in case of a failure of title, which was agreed to be made good," says the Maine Supreme Court on this point.

At the same time the rule is well established that the buyer may waive this right of demanding the personal deed of the seller, and the right is waived unless the buyer raises that particular objection when the deed of the third party is tendered to him.

A Verbal Waiver

IF A CUSTOMER gives a note to a contractor, and B. endorses it, as a general rule the note must be presented for payment and notice given to the endorser, otherwise he is relieved of liability.

On the other hand, if the endorser signs on the back under a clause stating that he "waives presentment and notice of dishonor," the waiver is binding in law, and the contractor may collect without providing presentment or notice.

Suppose, however, that the endorser endorses in blank, but before the ink is dry, says, "You need not bother presenting the note and notifying me, for I waive presentment and notice."

Is this waiver binding?

In other words, may a waiver of presentment and notice made at the time of the endorsement be proved in court by oral evidence?

The American Courts are not uniform on this point although the weight of authority is in favor of an oral waiver.

"The trend of modern decision and legislation is in favor of the doctrine that a waiver of presentment at the time of the endorsement may be proved by oral evidence," says a leading legal textbook.

One case to pass on this point is Weinbergen vs McConnell reported in 213 N. W. 313, where the Supreme Court of Wisconsin ruled that such a waiver was binding.

"The time at which a waiver is made is immaterial. It may be made at the time the note is executed; at the time of endorsement; before, at, or after maturity; or even after commencement of a suit thereon; or after judgment and pending notice for a new trial," said the court.

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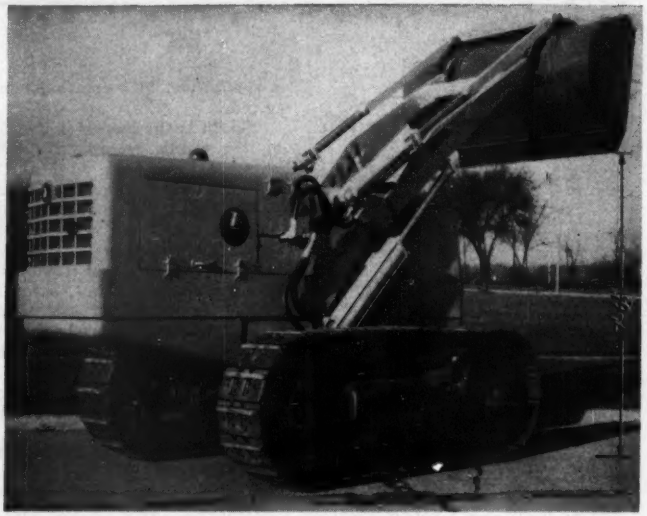
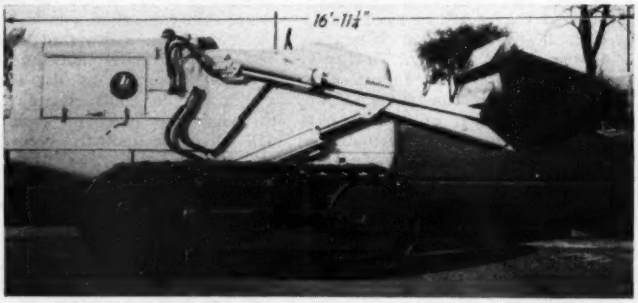
Hough Puts New Tractor Shovel



NEW HOUGH T-12 1-yd. tractor shovel is mounted on tracks with engine in rear for better weight distribution. This view shows rugged construction of H-frame boom, handled by double-acting 6-in. hydraulic rams. Dumping clearance is 7 ft. 6½ in.



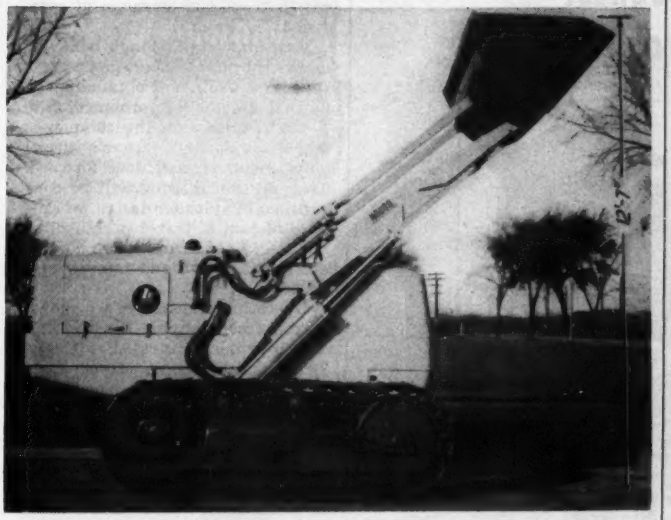
BUCKET RETURNS to near level keel in carrying position. Over-all length on carry is only 16 ft. 11¼in., which permits maneuvering in narrow quarters. Operator can see well in both directions from his front-end seat.

BY HAROLD W. RICHARDSON, Editor

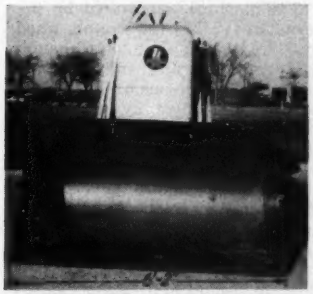
A BRAND NEW 1-yd. tractor shovel on tracks which closely follows the principles that have made their rubber-tired tractor shovels so successful will soon be announced by The Frank G. Hough Co., Libertyville, Ill. It has the engine at the rear for better balance and weight distribution against the bucket load out in front. The operator sits at the front where he has full view of his work. Five forward travel speeds are matched by an equal number of reverse speeds at slightly higher ratio for fast back-ups. Boom and bucket are both hydraulic control. And, summing it all up, this is a rugged machine designed as a bucket excavator and loader on tracks, not simply an attachment hung on the front end of a tractor.

We asked Hough officials how come they are bringing out a crawler-mounted unit now when the general trend of this type machine is toward rubber, and the company has been so successful with wheel

on Crawler Mounting



WHEN RAISED to full height of 12 ft. 7 in., bucket automatically remains level if guide arm rams are kept retracted. Bucket angle from level to 55-deg dump position is fully controlled by upper hydraulic rams.



WIDE BUCKET covers tractor crawlers, an advantage in both loading and bulldozing operations.

tractor shovels. Their answers make sense. They point out there is a definite field for track-mounted front-end excavators for basement digging, other odd excavation jobs, and for bulldozing. Crawler traction gives more crowd power when needed, and permits shorter turns and thus greater maneuverability in cramped working spaces. Hough believes there is a place for a rugged machine of this type for heavy-duty operations and where high travel speed around the job and between jobs is important.

Having determined the desirability of adding a crawler-mounted loader to their line, Hough engineers set out to design a machine having the advantages developed in long-time experience with wheel loaders. The new Model T-12 Payloader is the result.

Biggest advantages, Hough claims, of the T-12 over front-end loaders mounted on conventional crawler tractors (the company has made such a line for years as an attachment to International T-6 and T-9 tractors) are: (1) redistribution of weight by moving engine to the rear; (2) location of operator up front; and (3) full range of five forward and five reverse speeds.

In tractor front-end loader units, Hough points out, the combined weight of the engine in front and that of the load out beyond the front end results in unequal weight distribution over the tracks with excessive loads on front crawler assemblies. The T12 uses modified International T-9 tractor crawlers, and by putting the engine at the rear, Hough has moved the balance point of the new machine under load only 2¼ in. ahead of that of a bare TD-9 tractor. Thus, they have kept the weight well distributed over the tracks.

Putting the operator up front where he has full view of his work is regarded by Hough as a major achievement in design of their ma-

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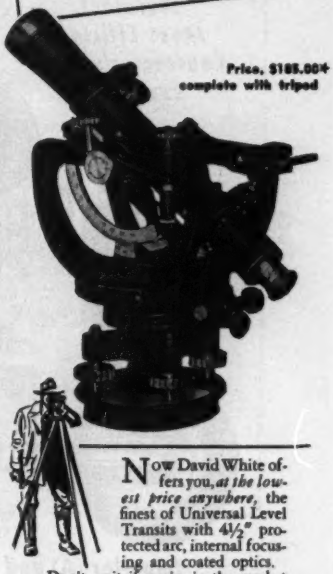

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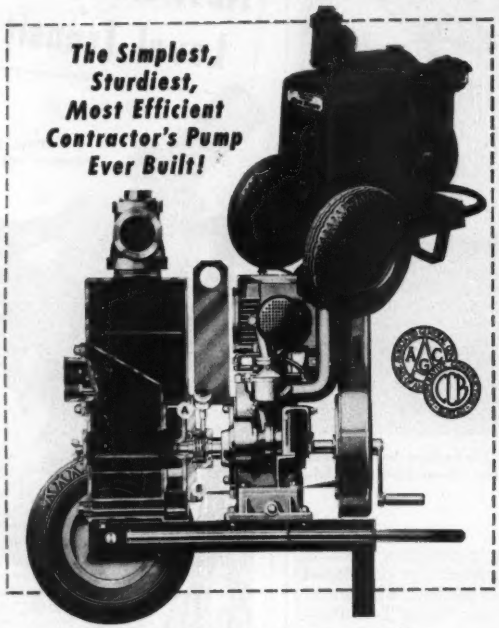

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IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB H-2

chines. They feel that the operator on conventional tractor front loaders is handicapped by being put behind the engine, with the loader out in front out of range of easy vision.

Most important, Hough believes, in tractor shovel operation is fast reverse travel, not obtainable in normal tractor performance. The T-12, in tune with the company's wheel Payloaders, travels backward faster than it does forward. Transmission shifting will be conventional Payloader design, whereby direction of travel is controlled by single lever operation. There are four forward and four reverse speeds.

Operating dimensions are shown in the accompanying illustrations. The 1-yd bucket is rated at 0.88 yd struck and 1.17 cu yd heaped. From digging or bulldozing position it automatically returns to level position at carrying height, and remains level as the boom is hoisted to maximum height. The rugged H-frame boom is controlled by double-acting hydraulic rams. Guided bars are also equipped with double-acting rams for absolute control of bucket angle at all times. Rated bucket load is 3,000 lb; maximum static load is 4,000 lb.

The machine is powered by International U269 gas engine, rated at 67 hp. Lifting time to full height is 8 sec; dumping and lowering time are 3 sec each. Hydraulic power is supplied by a constant running pump driven directly off the fan drive end of the crankshaft.

Operating weight is about 17,900 lb, about the same as the T-9 front shovel loader. Track tread is 5 ft; tracks are 15 in. wide with overlapping flat track shoes.

Hough proudly offers this new T12 to round out their famous Payloader line.

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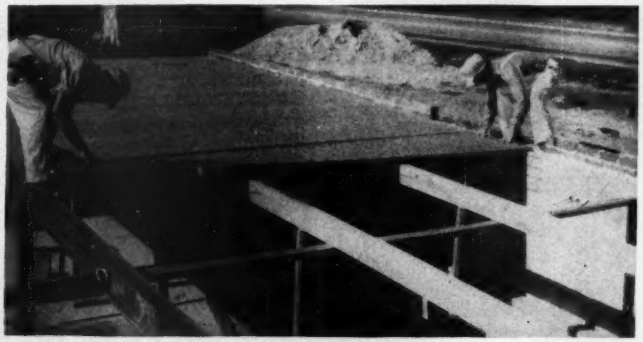
CONSTRUCTION EQUIPMENT NEWS • • *A Preview of*

By MELVIN DEAN, Equipment Editor

SELF-HEATING ASPHALT IRON uses gasoline as a fuel. It weighs 40 lb, and can be used to smooth asphalt, to heat tamp, or to clean tools. It has a sharp edge for cutting asphalt joints.—**J. E. Woods Mfg. Co., San Fernando, Calif.**



COMBINATION FORM and reinforcement serves for spans up to 14 ft. Cofar units combine deep-corrugated high-strength galvanized steel and transverse welded reinforcement. They serve as a permanent form and reinforcement for concrete floors. Cofar sheets are supported on and fastened to the main structural framing members. Available in 18- to 24-gage steel.—**Granco Steel Products Co., Granite City, Ill.**

TRENCH ROLLER features hydraulic operation of the dual steering wheels and leveling wheels. Adjustments are provided for leveling roller to suit any trench requirements. Frame has sufficient clearance to enable roller to work in depths to 25 in. Hydraulic control keeps machine on a level or horizontal plane from 6 in. above to 25 in. below road surface. Compacting effort varies from 310 to 370 lb per in. of roll width.—**The Galion Iron Works & Mfg. Co., Galion, Ohio.**

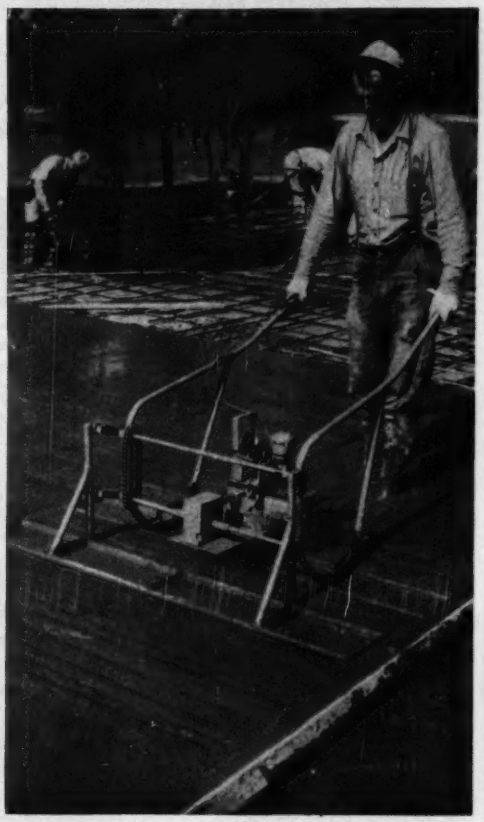
←

ROTARY CASTING CHUTES on snow plow feature hydraulically controlled complete-circle rotation. The chutes can be aimed in any direction —both chutes together, or each separately. Controlled from the operator's cab, they turn a full 360 deg, and are 10 in. in dia and 30 in. high. These chutes are especially recommended for use where the location of the excess snow is of extreme importance. All Sno-Flyrs are available with these chutes as extra equipment. Or, they can be installed on present plows from the M-170 to the M-300.—**Wm. Bros Boiler & Mfg. Co., Minneapolis 14, Minn.**

New Machinery, Tools and Equipment That Will Help You on the Job

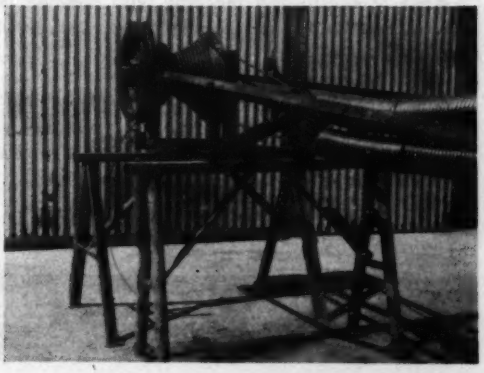
GOOSENECK-BOOM TRENCH HOE features higher speeds, greater digging depths, and maximum ruggedness. The Model 150 has a ½-yd capacity and is convertible to other uses. Gooseneck-boom construction permits use of a 2-part hoist line.—**Harnischfeger Corp., 4494 W. National Ave., Milwaukee 14, Wis.**

UNDERGROUND LOADER is a combination overhead and front-end tractor-loader. The Lodover will load overhead in a 14-ft shaft. It has a 1¼-yd heavy-duty bucket, and mounts on I-H T-9 or TD-9 tractors. Accessories available include dozer or angle blades, winch, boom, and snow plow.—**Shovel Supply Corp., 20th & Erie Ave., Philadelphia 32, Pa.**



CONCRETE TAMPING MACHINE "walks" across screeded concrete, tamping with an even pressure as it moves along. Positive tamping action is said to force down all aggregate. Powered by a ¾-hp gasoline engine, the RoboTamp tamps a 5-ft width. Weight of the RoboTamp is 60 lb.—**Clement Mfg. Co., 304 Equitable Bldg., Hollywood 28, Calif.**

AUTOMATIC TAGLINE, available in five sizes, is designed to provide an automatic and constant tension with a maximum variation of 20%. Calomatic taglines are made for assembly inside the boom in such a way that nothing projects out except the tagline cable. Tagline reel is energized by a spring attached at both ends to a cone drum. This drum is grooved to fit the cable. The Model A-P (smallest) is designed for ¾-yd clamshells, and affords a 75-lb pull over a 40-ft range. Larger models have the same design, and are built in a range to handle units with buckets up to 2½-yd capacities. The Model E is a compression-type unit and is available with 20- or 30-in. reels. The 20-in. unit affords a 400-lb pull over a 65-ft range; the 30 in. affords a pull of 270 lb over a 96-ft range.—**Calomatic Equipment Corp., 4546 E. Washington Blvd., Los Angeles 22, Calif.**



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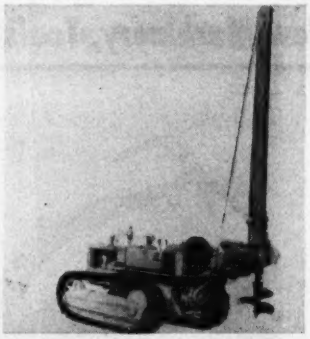
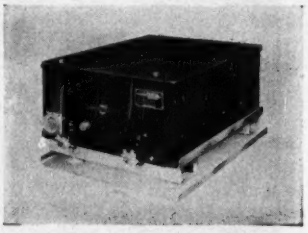


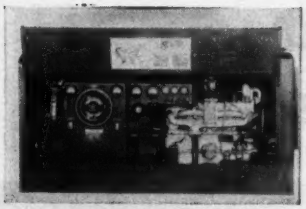
EARTH AUGER FOR D4—Trackson Model EA4 earth auger is now available with the Caterpillar 60-in.-gage D4 tractor. It will drill holes 9 to 24 in. in dia, to a depth of 8 ft with a standard 13-ft bar, or to a depth of 11 ft with the optional 16-ft bar. Larger diameter holes can be bored under certain conditions. The solid auger bar is square, permitting full bearing contact through the driving head. It has a 5,000-lb capacity, and handles poles up to 50 ft in length. **—Trackson Co., Dept. CM, Milwaukee 1, Wis.**



TWO-WAY MOBILE RADIO — Rugged radio unit, designed for adjacent channel operation, combines a 10-12-watt FM transmitter receiver and power supply in single sturdy wrap-around housing. The Bendix MRT-5B will operate on either of two radio channels in 152-162 megacycyle band. Shock mounting makes this unit especially adaptable for installation on construction equipment where heavy shocks and vibration will be encountered.— **Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.**

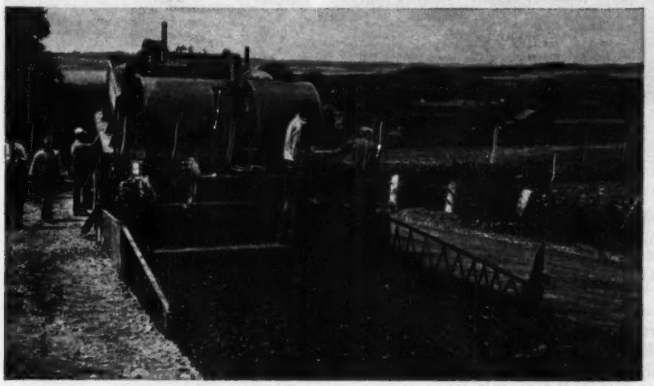
Sorry...

OUR SOFT HEADS are no match for hard rock; but the new Joy rotary air-blast drill (March, p 117) certainly is. While we reported the drill's production in dense, hard dolomite as only 1½ ft per hr, actually, the machine is a "Joy" to work with in this material for footage runs as high as 20 ft per hr.



GASOLINE - DRIVEN WELDER — Self-contained 300-amp arc welder can also serve as a 3-kw auxiliary power generator. Hinged side-doors in the sheet-metal canopy provide access to control panels, engine, welding generator, and other parts. Power is provided by a 53.5-hp Chrysler 6-cyl engine. Welding generator is rated 40-v 300-amp under 1-hr resistance load at 1,500 rpm. Current range is 50 to 400 amp.—**Hobart Bros. Co., Hobart Square, Troy, Ohio.**

MASONRY WATERPROOFER — Clear silicone-base compound is a water and stain repellent for porous or semi-porous masonry and mortar joints. Cor-O-Pel is said to penetrate to more than ¼ in., and to leave the surface non-glossy and unchanged in color or texture. It can be applied by gun or brush.—**Con-Cor Paint Co., 4550 Main St., Kansas City, Mo.**



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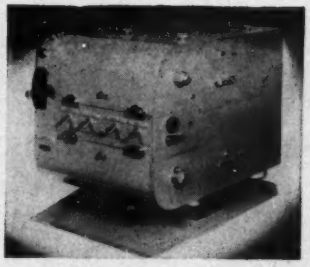
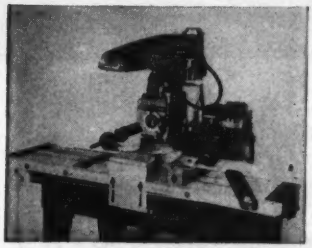
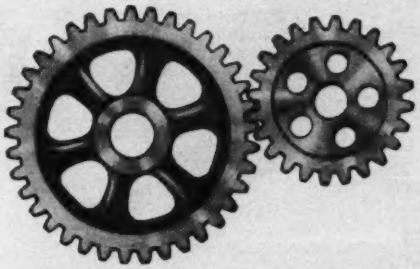


RECORDING OSCILLOGRAPH — Compact unit provides an accurate method of recording as many as fifty channels of separate static or dynamic data on a single strip of sensitized film or paper. Record magazines are quickly attachable daylight-loading separate units. Paper drive roller is driven by a cog belt. Speed adjustments from ⅛ to 60 in/sec are accomplished by a lever on the front panel. A red indicator light indicates when paper is torn, expended, or otherwise not feeding properly. Transverse timing lines are photographed every 1/100th sec. Weight of the unit is 56 lb.—**Midwestern Geophysical Laboratory, 2803 W. 40th, Tulsa, Okla.**

TRANSFORMER ARC WELDERS —Wilson Bumblebee arc welders are available as indoor or all-weather models. Features include: Instant arc-starting, wide current range, easy-to-operate controls, and minimum maintenance. Current ranges are: 60 to 375 for the 300-amp model; 80 to 400 for the 400-amp model; and 100 to 675 for the 500-amp model. Automatic Hot-Start control with arc-stabilizing capacitors are provided on the 300- and 400-amp models.—**Air Reduction Co., Inc., 60 E. 42nd St., New York 17, N. Y.**



RADIAL-ARM WOODWORKER — DeWalt 400 series of power-fed machinery is designed to permit builders to produce hard-to-get finished materials (flooring, window stripping, molding, etc.). Power-feed unit can be swung out of position when not needed, permitting use of the saw for cross-cutting, mitering, crosscadoing, sanding, and other standard operations. Material being fed is held against cutting tool by a constant pressure.—**DeWalt, Inc., Dept. CM, Lancaster, Pa.**



Is your machinery insurance geared to present values?

Do you know what your machinery is *really* worth? You can't depend on "book" values. Charging off a fixed percentage to depreciation each year gives you only a theoretical figure which may be far below the actual value... *generally is!*

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(2) ***To provide valid data for support of a possible claim, as required by insurance policies.***

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200-HP Cummins Diesel— High top speed (25 m.p.h.), plenty of lugging power. Compression release for quick starts.

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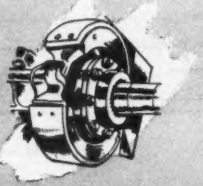
Comfortable Seat— Reduces operator fatigue, by absorbing the shocks in rough going.

Adjustable Control Levers— Heiliner cable power-control unit is within finger-tip reach. Levers adjustable to suit operator.



4-wheel Brakes—Heavy-duty, two-shoe air brakes. Auxiliary hand controls provided also.

Final Planetary Drive Reduction Gears — Can be serviced without removing wheel or disturbing brakes or hub bearings.

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Moved 134 cu. yds. of compact red clay per 50-minute hour. Picked up heaped loads in an average of 90 seconds. Made 2,500-foot round trips in an average of 6 minutes.

No wonder Supt. W. E. Payne considers Heiliners the most satisfactory, low-cost method of moving earth.

To contractors everywhere, using Heiliners means getting the job done — in all kinds of weather, over all kinds of ground and fill conditions. It means reducing downtime and maintenance costs. It means a good showing.

Heiliners are available with either an 18-cu. yd. scraper or a 20-cu. yd. bottom-dump wagon—both interchangeable.

See at first hand how Heiliner advantages can make bigger dirt-moving profits for you. Ask your Heil road-machinery distributor to arrange a demonstration.

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For bricklaying and heavy-duty work.

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Give full protection to passersby.

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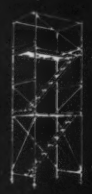

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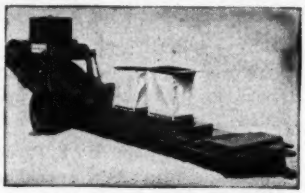
THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Dept. CM&E, Long Island City 1, N. Y.

DEMAND-OXYGEN UNIT — Self-contained demand-type oxygen unit provides emergency treatment of smoke inhalation, carbon-monoxide inhalation, heart failure, and other applications requiring oxygen. Opening the cylinder valve and placing the facepiece on the patient causes the unit to administer oxygen automatically as the patient's breathing requires it.—**Mine Safety Appliances Co., Braddock, Thomas, & Meade Sts., Pittsburgh 8, Pa.**

TRACTOR WINCH—For mounting on Caterpillar D4 tractors unit has an extra-large drum capacity ranging from 3,480 ft of ⅜-in. to 870 ft of ¾-in. cable. Two-piece drum divider flange permits adjustment of barrel length for required cable capacity. End of transmission shaft provides for measuring spool.—**Hyster Co., 2921 N. E. Clackamas, Portland 8, Ore.**

RUBBER RE-VITALIZER—Plasticizer is said to prolong the life of rubber parts and surfaces that have hardened, cracked, or become inelastic with age. Rub-R-Vive is a non-inflammable and non-volatile liquid that can be applied by cloth or brush. It is available in pint, quart, and gallon cans.—**Schwartz Chemical Co., Inc., 326 W. 70th St., New York 23, N. Y.**



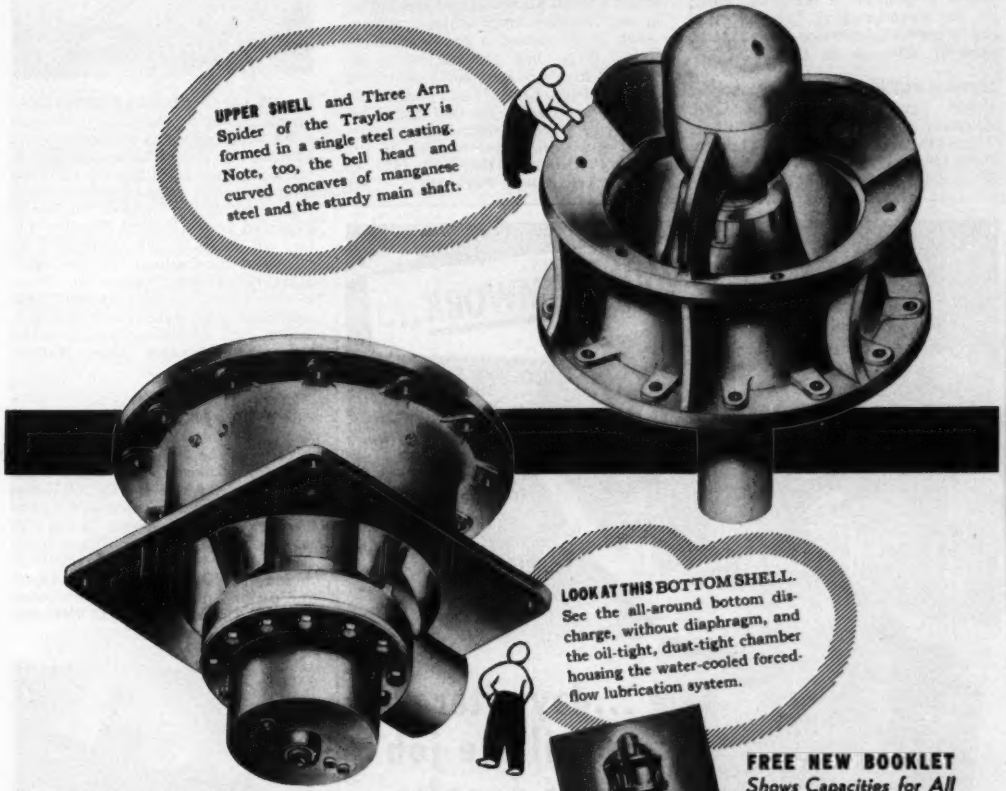
BULK-CEMENT CONVEYOR—Accessories adapt the Model 358 undercar aggregate car unloader and the Models 362 and 363 portable belt conveyors to handle bulk cement and other dry-batch materials. The combination can also be used to unload and stockpile. The unloader has been fitted with complete metal covers for the undercar section and up-run. Conveyor housing encloses the entire length of the belt. Concentrating spout at the head end controls escape of fines. — **Barber-Greene Co., Aurora, Ill.**

Any Way You Look at it . . .

the TRAYLOR TY Gyratory

is an outstanding Crusher

UPPER SHELL and Three Arm Spider of the Traylor TY is formed in a single steel casting. Note, too, the bell head and curved concaves of manganese steel and the sturdy main shaft.



LOOK AT THIS BOTTOM SHELL. See the all-around bottom discharge, without diaphragm, and the oil-tight, dust-tight chamber housing the water-cooled forced-flow lubrication system.

The design features described above, enable the Traylor TY to maintain its lead in the field of secondary fine crushers. With the increased capacity of each succeeding zone in the crushing chamber the TY has a remarkably low power-per-ton factor. These features as well as many others are fully described in the Traylor TY Reduction Crusher bulletin. Return the coupon for your free copy today.

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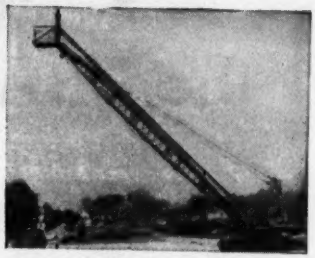
Jaw, Reduction and Gyratory Crushers · Crushing Rolls

NON-SKID FLOOR SURFACER—Liquid-based carrier blends with any type of heavy-duty floor paint to form a durable, non-skid floor surfacing. Adtex is said not to affect the properties or drying characteristics of the paint to which it is added. It can also be used with oil-based, rubber, casein, or water-mix paints to provide a textured finish; or for waterproofing exterior, masonry paints.—**Lowebco, Inc., 1525 E. 53rd St., Chicago 15, Ill.**

HYDRO-FEED BAND SAW—Model HP-36 bandsawing machine uses standard saw bands up to 1 in. wide. Throat capacity is 36 in.; work height, from 15½ in. up. Power is provided by a 10-hp motor. Tool speed range is 40 to 10,000 fpm. Correct feed pressure is automatically controlled by resistance of the work. The saw will cut through steel, wood, plastics, and other materials.—**The DoALL Co., Des Plaines, Ill.**

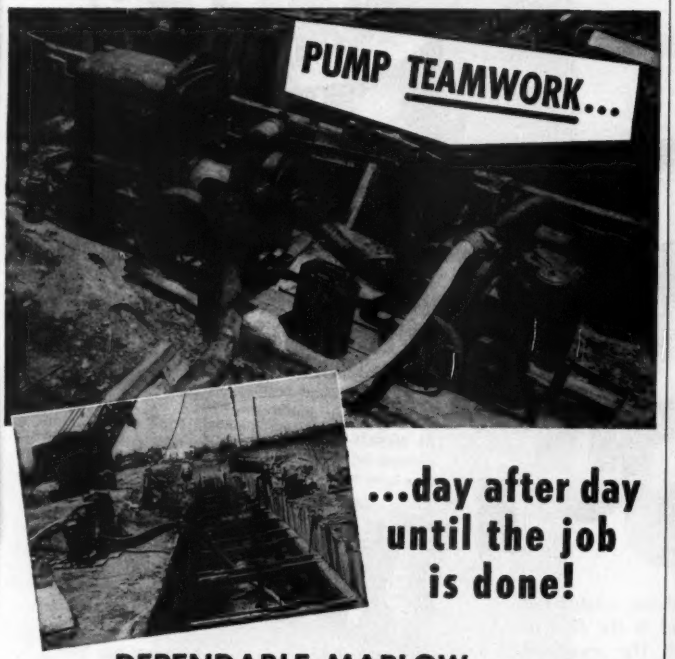
OVERLOAD WARNING SIGNAL—Overload safety device automatically emits a shrill klaxon signal and lights a red warning lamp when crane or hoist loads exceed a predetermined limit. This unit consists of a U-shaped pressure bar and a sensitive micro-switch. Entirely self-contained, power is provided by two flashlight batteries. Over-all dimensions are: 8¼x5x14¾ in. Gross weight, 16 lb. —**W. C. Dillon & Co., Inc., 1421 S. Circle Ave., Forest Park, Ill.**



LIGHT-DUTY CRAWLER CRANE—Specially built Model 310 crawler-mounted crane-type machine has a 52-ft boom. Platform is attached to the boom end by a pantograph-type mounting that keeps platform level regardless of the angle of the boom. Powered by a General Electric motor, all motions are controlled by air, with Air-Cushion clutches operating the swing mechanism. Boom is raised and lowered by two separate boomhoist units, the second provided for additional safety.—**The General Excavator Co., Marion, Ohio.**

BELT-REPAIR COMPOUND—Anti-abrasion plastic rubber compounds are recommended for protecting and repairing worn conveyor belts. Magic Vulc is applied to belt areas which are worn or damaged, showing exposed duck carcass. It can also be used to seal edges and rivet holes. Other applications of Magic-Vulc include the coating of valves, pipes, and fittings, and the lining of chutes. —**Magic Chemical Co., 121 Crescent St., Brockton 2, Mass.**

JOINT-TAPPING SLEEVE — Mechanical joint requires only a 10-in. ratchet wrench for complete installation. This stuffing-box-type unit is said to provide bottle-tight joints without stressing flanges or bolts. Rubber side-flange gaskets are molded on a metal backing and require no trimming. Smith joints are available in sizes ranging from 4x2 to 12x12 for water and gas lines with 0- to 175-lb working pressure. They are fabricated of various materials.—**The A. P. Smith Mfg. Co., 550a N. Arlington Ave., East Orange, N. J.**



...day after day until the job is done!

DEPENDABLE MARLOW Self-Priming Centrifugal Pumps team up to keep the ditch dry on this pipe laying job through Canarsie, Brooklyn, N. Y.

It takes a good pump to stand up to continuous pumping day in and day out. These pictures show TWO good pumps . . . BOTH Marlow Water Wizards . . . at work to keep this big job going smoothly. Trouble has no place here. A contractor wants dependability . . . the kind that keeps men and other equipment on the job and saves him money. That's the famous Marlow dependability.

Marlow makes the world's most complete line of construction pumps — and the largest size range. Self-Priming Centrifugals and Mud Hog Diaphragm Pumps. Write for Bulletin C48.

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The Power Graders That Have Everything

"88-H"—a new model of medium size with all the extra traction and maneuverability of All-Wheel Drive and All-Wheel Steer.

"99-H"—popular with contractors and highway departments for its all around performance, under all conditions, in all seasons.

MASTER "99"—combining the best features of the "99-H" with the extra power, traction and road speed of its 100 horsepower engine.

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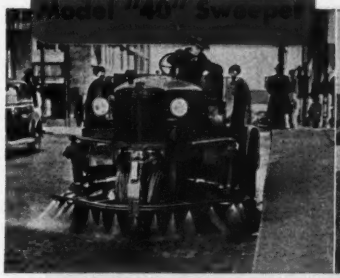
The AUSTIN-WESTERN LINE includes Jaw Crushers and Roll Crushers in a wide range of sizes; plus matching screens, elevators, conveyors and bins. Exclusive features increase output, and reduce maintenance costs.

Skilled engineering characterizes each and every Austin-Western crushing, screening and washing plant, which is tailor-made for a particular production problem. We would welcome the opportunity to discuss yours.

Model "40" Sweeper



Road Rollers

Fast, maneuverable and economical. Dirt is thrown directly into the 2-yard hopper. Right-hand or left-hand gutter broom, or both.

3-WHEELED ROLLERS with hydraulic scarifiers. TANDEM ROLLERS of the variable weight type. All with gas or diesel engines.

The ¾-swing Badger wastes no power swinging extra weight; makes more swings per hour; can work in closer quarters.

Advanced engineering and honest construction characterizes each Austin-Western product. Your nearby A-W distributor will gladly recommend the one best suited to your needs.

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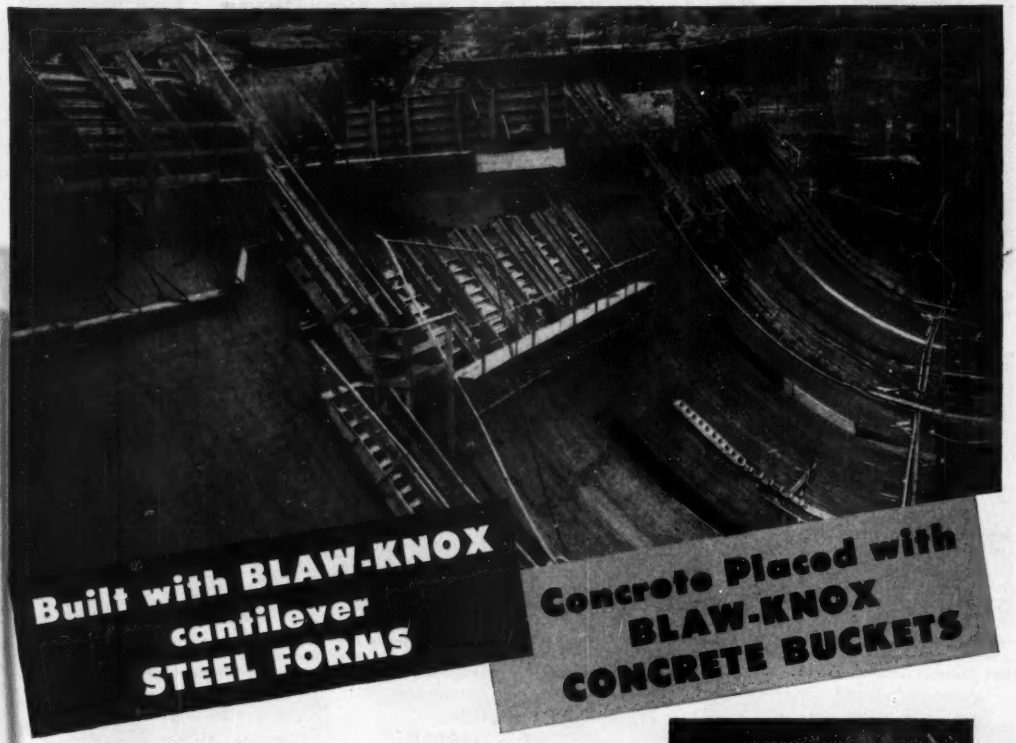
A Million Yard Concreting Job



WITH over a million cubic yards of concrete being placed on the Mt. Morris Dam project—Blaw-Knox Steel Forms and Concrete Buckets are used to speed completion and keep costs at minimum levels.

Whenever you have a huge undertaking like this, or any tough or unusual concreting problem call on the Blaw-Knox engineering service, available to any contractor from preliminary planning to the final pour. Blaw-Knox engineers can recommend the correct forms for your job, and help you cut costs by suggesting simplified forming methods that often reduce the number of necessary operations. When you write for information, also ask for Bulletin 2035.

Model CAC 8 yd. Concrete Bucket placing concrete on the Mt. Morris Dam job. Equipped with air-operated clam gates, these Blaw-Knox buckets are designed for big-job specifications calling for air-entrained cement and 6" aggregate in the concrete.

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

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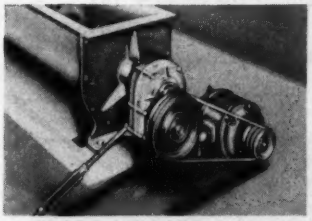
ELECTRIC HAMMER AND DRILL—Combination tool can be used for: Drilling concrete and masonry; drilling metal and wood; and driving, grinding, buffing, and wire wheels. The Wodack Do-All is powered by a universal motor. Weight is 15 lb. Average speed when drilling in concrete is 3½ in./min on a 9/16-in. hole. Drilling range of the hammer is from ¼ to 1⅝ in.—**Wodack Electric Tool Corp., 4627 W. Huron St., Chicago 44, Ill.**



TORQUE-ARM REDUCER — Shaft-mounted reducer handles output speeds from 115 to 330 rpm. It is produced in four sizes covering capacities up to 27 hp. Shaft mounting eliminates flexible couplings, sliding base, and foundation, and does away with lining-up operations. It can be driven through V- or flat-belt drives, although the designers recommend Taper-Lock sheaves. Interchangeable shaft-keyed bushings adapt shaft sleeves to different shaft sizes.—**Dodge Mfg. Corp., Mishawaka, Ind.**

CONCRETE TESTING MACHINE—Featuring separate loading and weighing units, this concrete tester has a capacity of 100,000 lb. Two-unit design is said to prevent transmission of load shocks to the indicator and to keep operator out of range of flying or falling particles from breaking specimens. This machine is designed primarily for testing 2-in. cubes and 3x6-in. cylinders. Loading unit has a 17⅝-in. clear space between columns and a maximum opening of 22¼ in. between ram and upper platen. Ram travel is 3 in. at speeds up to 1¼ in. per min. Floor area required by the two units is approximately 70x20 in. Over-all height is 65 in.—**Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.**

THREE-WHEEL HAULING CART—Speed-Barrow features unloading of material without tipping. Discharge is accomplished by unlatching, by foot, of the gate. Made in two models, the Speed-Barrow has a weight capacity of 1,800 lb; a volume capacity of 12 ft. Dimensions are: Body depth, 36 in.; body width, 21 in.; axle length, over-all, 32 in.; height from floor, front, 48 in.; height from floor, rear, 41 in.; and top body length, 42 in.—**American Conveyor Co., 1115 W. Adams St., Chicago 7, Ill.**

MODEL K-12-2, *3 H. P., 4-cycle, single cylinder, air-cooled. Length 14", width 14", height 19". Weight 43 lbs.*

RELIABLE POWER FOR:
Concrete Mixers • Road Oilers • Compressors
Floor Sweepers • Generators • Hoists
Lift Trucks • Centrifugal Pumps
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Kohler Engines are engineered and built to give the economical service that has won world-wide acceptance for Kohler Electric Plants in construction and other industries. Made in several sizes, they are suited to a wide range of uses. Kohler engineers will gladly assist in working out applications for your particular requirements. Write for information.

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Missouri Highway Job Proves

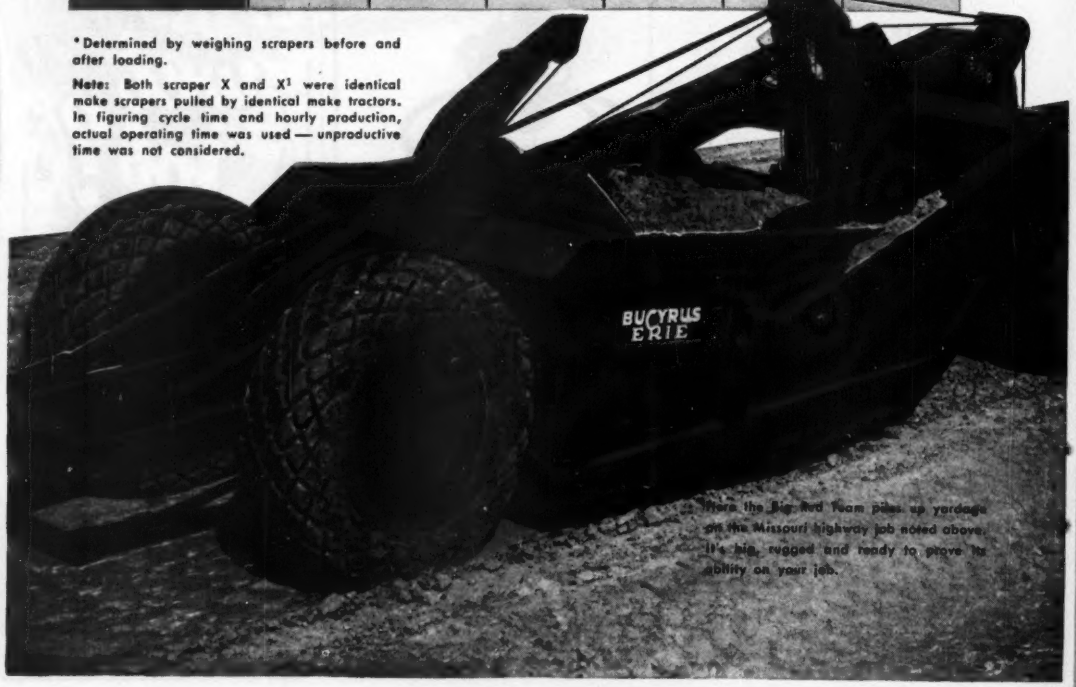
BIG RED TEAM

LOOK at these figures on a big Missouri highway job with a haul distance of 2350 feet one way. Just as on similar jobs throughout the country, the Big Red Team of Bucyrus-Erie Scraper and International TD-24 Tractor outperformed comparable size competitive units on every count — yardage, loading speed, dumping speed, overall cycle time.

Equipment	Capacity (cu. yd.)	Average Load* (cu. yd.)	Average Loading Time	Average Dumping Time	Average Cycle Time	Cu. yd. per hr.
Big Red Team Of B-250 Scraper and TD-24 Tractor	22	19.9	75 sec.	33 sec.	12 min. 46 sec.	87
Tractor-Scraper Combination X	18.7	13.9	77 sec.	65 sec.	16 min. 30 sec.	51
Tractor-Scraper Combination X^1	18.7	13.9	80 sec.	70 sec.	15 min. 11 sec.	55

*Determined by weighing scrapers before and after loading.

Note: Both scraper X and X^1 were identical make scrapers pulled by identical make tractors. In figuring cycle time and hourly production, actual operating time was used — unproductive time was not considered.



Here the Big Red Team piles up yardage on the Missouri highway job noted above. It's big, rugged and ready to prove its ability on your job.

WINS ON EVERY COUNT

Here's What Those Facts Really Show!

1 The B-250 with 3.3 yd. greater capacity than either competitive scraper averaged 6 yd. larger loads — carried 32 and 36 more yards per hour respectively than the competitive units.

2 The B-250, even with a payload 6 yd. greater, loaded faster and dumped in half the time of the competitive units.

3 The B-250 covering the same 2350-ft. one way haul distance as the two competitive outfits, completed the load-travel-dump-return cycle in an average of 23% and 16% less time respectively than the competitive units.

Dumps Faster

Loads Faster

Loads Bigger

Hauls Faster

Facts speak for themselves — and this is no isolated example. We have a variety of such case histories on record. Verify them by asking your International Industrial Tractor Distributor for a demonstration on your own job. Watch the Big Red Team outperform other crawler-scraper combinations — outperform rubber-tired outfits on much longer hauls than has been generally accepted.

24BTSIC

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

See Your

International Industrial Tractor Distributor

Ask the men who live with wire rope...

They insist on genuine

CROSBY CLIPS

Drop-forged
Hot dip galvanized
SIZES FOR ALL WIRE ROPE
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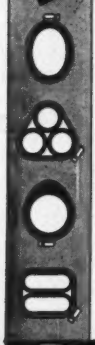
BREEZE MARK PRODUCT

Clamp Most Anything with "Aero-Seal" WORM-DRIVE CLAMPS



- Hold odd-shaped connections
- Hold multiple pipes or ducts
- Conforms to any shape
- No distortion — no crimping
- Vibration-proof . . . no parts to lose or loosen
- Use again and again
- Made in any length
- All stainless steel bands at no extra cost

WRITE TODAY FOR FREE SAMPLE!

"Aero-Seal" HOSE CLAMPS

AERO-SEAL Worm Drive Never Works Loose

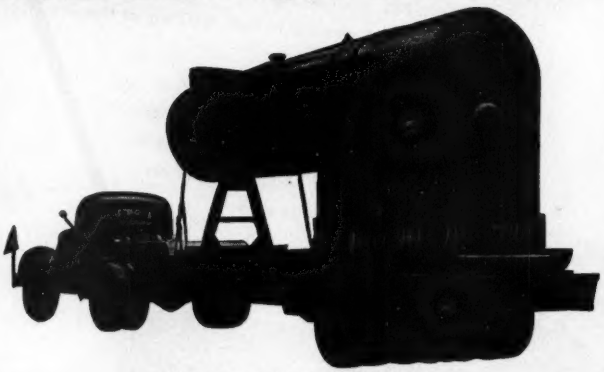
BREEZE CORPORATIONS, INC.
48 South Sixth St., Newark, N. J.

LIGHTWEIGHT BUILDING BLOCKS—New method for making blocks from sawdust and cement is said to result in a fire-resistant lightweight product. The blocks measure 8x8x16, and can be sawed, nailed, or drilled. No special curing is required, and the blocks can be air-dried in temperatures of 70 deg. —**Roman Nejelski, 1400 W. Washington Blvd., Fort Wayne, Ind.**

GROOVED PIPE FITTINGS—Malleable fittings for grooved pipe include L's, T's, adapter nipples, crosses, laterals, bull plugs, and reducers. Gruvagrip fittings come in sizes from ¾ to 12 in., and will withstand the same working pressures as Gruvagrip couplings. Inside walls are true circles, and they are smooth and gently curved to prevent turbulence and frictional losses. Each fitting has a permanent identification mark.—**Gustin-Bacon Mfg. Co., 1412 W. 12th St., Kansas City, Mo.**

HEAVY-DUTY MOTOR—Dual-belt variable-speed motor is available with ratings to 50 hp. Autotaut tension control on the Varidrive motors is said to counterbalance belt load. A calibrated spring maintains pressure between the two halves of the driven Varidisks and the sides of the belt.—**U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 54, Calif.**

NEED STEAM?



LUCEY 104 H.P. 150 and 250 lb. W.P.
Skid mounted with 24" oil burning base.

LUCEY Inside Seal-Weld Double Calked BOILERS

1. 1040 sq. ft. heating surface.
2. 160 cu. ft. furnace volume.
3. Ample steam volume 54 cubic feet.
4. Oversize seamless firebox.
5. Butt straps calked and seal welded inside.
6. Four-inch water space around firebox.
7. Boilers available from 40 to 150 H.P. Working Pressures from 125 to 350 lbs.

Write for descriptive literature.

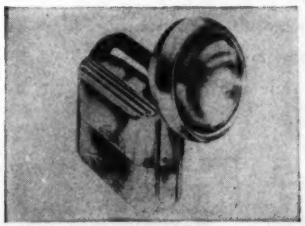
LUCEY BOILER and MANUFACTURING CORPORATION
CHATTANOOGA, TENNESSEE
1514 CHESTNUT ST CHATTANOOGA
LUCEY
1313 STERLING BLDG. HOUSTON, TEXAS

SMOKE STACKS • BREECHINGS • FLY ASH REMOVAL UNITS
ASME UNFIRED PRESSURE VESSELS

DRUM AND BARREL COVERS—Neoprene-impregnated paper covers fit standard 55-gal drums. The covers are single-ply, 2 ft in dia, and have a 4-in. skirt hemmed with an elastic band around the bottom. When slipped over the drum, elastic holds cover in place keeping contents dry and clean. Covers will be available in other sizes and shapes if demand warrants.—**Chase Bag Co., 309 W. Jackson Blvd., Chicago 6, Ill.**

MASTIC-MATERIALS PUMP — Hydraulically operated pump delivers heavy lubricants and mastic materials that will not readily seek their own level. The unit exerts 7,110 lb pressure, and is said to empty completely and clean sides of 400-lb or 55-gal drums. Built-in chain with toggle clamp holds drum in position on elevator platform.—**Lincoln Engineering Co., 5702-19 Natural Bridge Ave., St. Louis 20, Mo.**

DOUBLE-CLOSURE BIN VALVE—Twistite valve consists of two rubber sleeves joined by a rotating steel collar. Elasticity of the rubber sleeves permits them to wrap around lumps caught in the valve during closure. Standard 6-in. valve weighs 35 lb with the ratchet cable-lock mounted on the valve frame. It will handle lump sizes to 2½ in., and requires a 30-lb pull for closure.—**Stephens-Adamson Mfg. Co., Aurora, Ill.**



SEALED BEAM LANTERN—All-weather electric lantern is powered by 6-v battery. Sealed beam lamp employed is rated at 5,500 beam candlepower. Lamp has clear lens for spotlighting purposes. Lantern has aluminum case and weighs 44 oz. A larger case, with space for spare battery, is available.—**Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.**

...All Masonry Needs Protection

38 YEARS OF TRIALS, TESTS AND CHANGES TO REACH PERFECTION.

Today, we supply to the construction industry products of such merit and efficiency as have become generally recognized as being ideal for the function for which they were originally designed.

Euclid Senior High School, Euclid, Ohio. Architect — Harry A. Fulton, Cleveland, Ohio.

Associate Architects — Ben Krinsky and R. B. Dale Motte, Cleveland, Ohio.

Mercy Hospital, Miami, Florida. Commencing of THORO-SEAL applications. Architect — Steward and Skinner, Miami, Florida. Contractor—J. Y. Gooch Co., Miami, Florida.

Get our 20-page brochure, pictorially describing, in detail, "How To Do It." It's yours for the asking. — No. 140.

Standard Dry Wall Products

BOX X. NEW EAGLE, PENNA.

just say when and say where

When you buy Cumberland Cements, delivery is *our* responsibility. Freight costs are included in the price, and we have a team of experts working full time to keep those costs *down*.

These traffic specialists know transportation from A to Z—schedules, routes and rates. They anticipate your order. They're ready right this minute to determine the safest, fastest, cheapest way of delivering Cumberland Cements to any destination you name. And if anything goes wrong enroute, it's *their* job, not yours, to correct it.

Ever stop to think how much this means to you in the saving of time and trouble? Yes, and money, too.

Cumberland

PORTLAND CEMENT COMPANY

Chattanooga Bank Building • • Chattanooga 2, Tenn.

Portland — High Early Strength — Air Entraining — Masonry

Cumberland Cements

After hard facing with WEAR-ARC 12, this bucket has seen many months of tough service digging blue stone, without appreciable wear from abrasion or impact.

Increase the life of your Equipment Many Times Use Wear-Arc against Abrasion, Impact, Corrosion

Bucket and shovel tooth life is increased many times by welding wedge bars to worn tooth point with WEAR-ARC WH and hard facing with WEAR-ARC 12 electrodes.

To reclaim worn equipment and hard face against excessive wear, you will find one, or a combination of two, of the seven basic WEAR-ARC hard facing electrodes does the best job . . . increases life as much as four times or more.'

WEAR-ARC WH is ideal for build up on manganese steel; WEAR-ARC 12 for providing that hard wearing surface. Ask for bulletin No. 10550, illustrating and describing properties and welding procedures for the complete line of WEAR-ARC hard facing alloys.

"I Like the rod that comes in the RED can"

SEE YOUR NEAREST ALLOY RODS DISTRIBUTOR

ARCALOY for stainless steel
NICKEL-ARC for cast iron
TOOL-ARC for tool steel
WEAR-ARC for hard facing
IRONCLAD-ARC for general use

ALLOY RODS CO. York, Penna.

MOVING DIRT **from basement excavation direct to dump truck with gas engine driven Farquhar 334-T Conveyor saves time and money for contractors . . . back-breaking work for men.**

FARQUHAR CONVEYORS

speed excavation of

BASEMENTS

This versatile Farquhar Trough Conveyor is the best workman in *any* job . . . removing dirt from excavations . . . loading and unloading trucks . . . moving bricks, blocks, sand, gravel, aggregates, all types of building materials horizontally or at an elevation.

All through the construction industry you'll find Farquhar Conveyors replacing costly old-fashioned hand methods with speedy, streamlined mechanized operations . . . saving *time, manpower, money!* For instance, tests prove that Farquhar Conveyors *more than pay for themselves* by eliminating the need for costly ramps and scaffolding in moving wet concrete from ready-mix trucks to forms!

Farquhar offers you a complete line of conveyors for portable, semi-permanent or permanent use, to handle any and all kinds of loose or packaged materials. Be sure to get full information *now* on how Farquhar Conveyors can help you *keep costs down* even though labor and material expenses may go up.

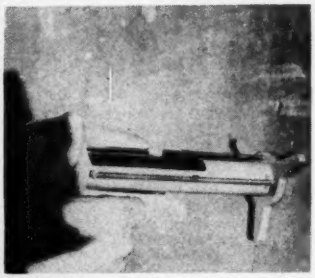
WRITE us about your problem *today* . . . we have the know-how to help you solve it quickly, efficiently, economically! A. B. FARQUHAR CO., *Conveyor Div.*, Dept. A-26, 142 N. Duke Street, York, Pa. or 618 W. Elm Street, Chicago 10, Ill.

Farquhar CONVEYORS SAVE YOU MONEY

WORLD'S MOST COMPLETE CONVEYOR LINE

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY

WATER-REPELLENT COATING—Flexseal waterproofing compound is designed for use on masonry and various insulating materials. Depending on nature of the surface, and amount used, Flexseal will penetrate from ⅛ to ¼ in. It is colorless; can be applied by spray, brush, or poured on and will cover 200 to 330 sq ft/gal.—**Flexrock Co., Filbert & Cuthbert, Philadelphia 4, Pa.**

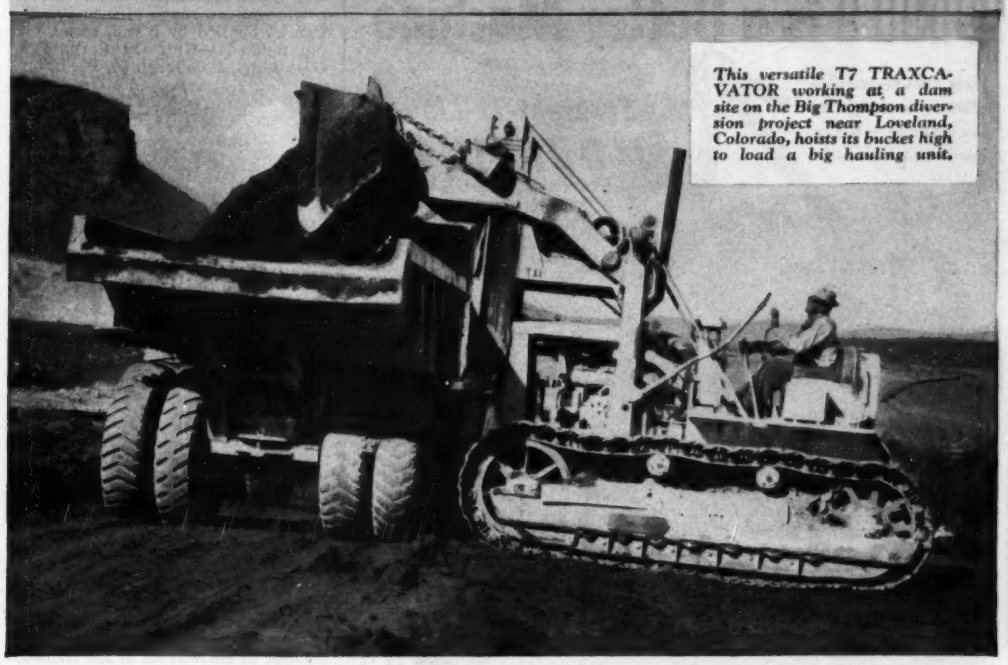


CONCRETE HARDNESS TESTER—Instrument determines compressive strength of concrete by observing rebound of a spring-propelled hammer. It is not intended as a substitute for test cylinders, but is said to be an adjunct to them; and to speedily determine the rate at which concrete hardens for removing form work and shoring. In operation, the amount of rebound (average of 6 to 10 readings) is compared to a graph giving a measure of compressive strength. This estimate is said to be accurate within 15 to 20%.—**A. R. Anderson, Springdale, Conn.**

IARD-FACING ROD—Oxyacetylene welding rod is designed for hard facing against medium impact and high abrasion. Wear-Flame "40" consists of wear-resistant chromium-carbides contained in a hard iron-chromium manganese-alloy matrix. Hardness of deposited metal is 56 to 58 Rockwell C. The rod is available in ⅛-in. dia in random lengths, and 5/32 to ⅜ in. in 14-in. lengths.—**Alloy Rods Co., 7105 W. Market St., York, Pa.**

FRICTION GLAZING CLIPS—Friction-type clips are designed for glazing Thermopane units having an over-all thickness of ½ in. in steel, aluminum, or wood sash. The clips are made from cadmium-plated spring steel. Advantages claimed are: They act as a resilient and permanent setting block; they provide equal spacing between the edge of the glass and the sash frame; they allow ample clearance between the back and face stops which affords a uniform glazing compound bed; and the sharp points punctured in the metal act as a frictional grip in the sash frame and keep the units from shifting.—**Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.**

MASTER WORKER!



This versatile T7 TRAXCAVATOR working at a dam site on the Big Thompson diversion project near Loveland, Colorado, hoists its bucket high to load a big hauling unit.

Master of any construction job— the T7 works for less!

Big and powerful, the T7, largest in the TRAXCAVATOR line, has the ability to take care of any work shoved its way . . . to do the work and still turn in lowest costs per yard. The long-lived T7 expertly manages digging, loading, 'dozing, grading, pioneering, stripping — in any materials. It's built tough for a long, rough life.

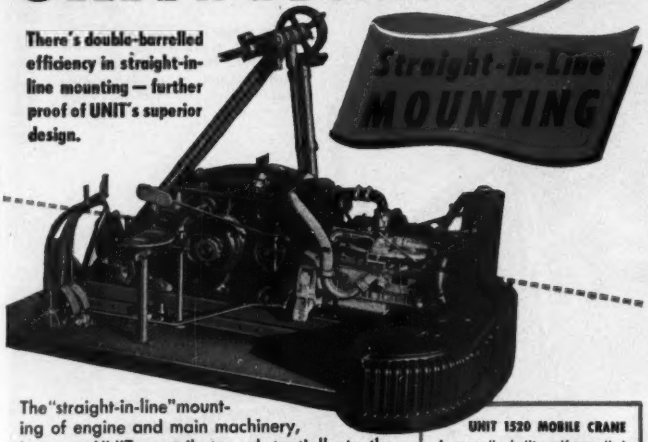
The one-man crew on the T7's seat controls 22,000 pounds of pushing power that can be applied directly to the bucket for big loads every time. Unit engineering — TRAXCAVATOR to "Caterpillar" Diesel Tractor — assures balanced power, capacity and weight, regardless of unfavorable ground and adverse grades. The T7 can sprint — with a load — at six miles an hour . . . or it can excavate in ground-gripping low gear. High bucket-lift keeps the bucket clear of sides of big-capacity hauling units.

There are five profit-proved sizes of TRAXCAVATORS (1/2 to 4 cu. yds.). See your TRACKSON-"Caterpillar" Dealer . . . or write TRACKSON COMPANY, Dept. CM-41, Milwaukee 1, Wisconsin.

TRACKSON
TRACTOR EQUIPMENT

1 of 10 Reasons Why UNIT is a Better Machine

There's double-barrelled efficiency in straight-in-line mounting — further proof of UNIT's superior design.



The "straight-in-line" mounting of engine and main machinery, in every UNIT, contributes substantially to the life, performance, and efficiency of the machine. Power is transmitted through a worm-driven power take-off, and the reduction from engine speed to main machinery is accomplished in just "one step." This simple method eliminates many wearing parts, minimizes friction losses, and prevents dissipation of power. This modern arrangement fits compactly into smaller space, providing an extremely low overhead clearance with ample space on both sides of engine and main machinery. With this type of installation, weight is more evenly distributed, and all working parts operate in perfect alignment.

UNIT 1520 MOBILE CRANE

A ruggedly built, self-propelled rubber-tired crane—operated by ONE man—powered by ONE engine—Hook Roller construction—Air Brakes—Hydraulic steering—4-speed Air-actuated Transmission. Heavy duty, yet operated with remarkable Speed, Safety, and Economy.

5th of a series of ten ads describing outstanding UNIT features.

UNIT CRANE & SHOVEL CORP., 6305 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

WINSLOW — PORTABLE TRUCK SCALE

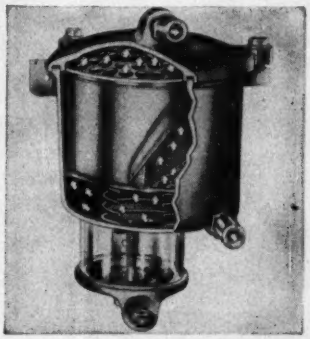
"THE CONTRACTORS' SPECIAL SCALE"

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site.

Capacities: 15-18-20-30 Ton—Write us for your nearest distributor

Mfd. by: WINSLOW SCALE COMPANY, P. O. Box 1198, Terre Haute, Indiana

RUST PREVENTIVE—No-Rust No. 6 is recommended for protection of metal surfaces against corrosion in either indoor or outdoor exposure. It is a rust preventive of the thin-film type. Coverage is 390 sq ft/gal. It has good storage characteristics, and when applied, is stable under a temperature range of 0 to 190 F. Can be applied by brush, spray, or dip methods.—**Gulf Oil Corp., 722 Gulf Bldg., Pittsburgh 30, Pa.**



COOLING-SYSTEM FILTER—Electro-chemically activated cooling system filter can be used with any liquid-cooled gasoline or diesel engine. The Perry filter is said to assure a clean cooling system and to prevent scale insulation of block, water jackets and radiator, eliminating a cause of burned valves and scored pistons. Electro-chemical action is further said to keep foreign matter in suspension in the coolant, and to deposit the residue within the filter. Three models are available in capacities from 6 to 30 gal.—**Spark-O-Liner Corp., 601 Eleventh Ave., S., Minneapolis, Minn.**

STEAM-JET CLEANER — Speedy-jet Model 100 cleaner is designed for use where ample high-pressure steam is available. The Speedyjet includes a high-pressure detergent tank mounted on a lightweight dolly with rubber-tired 10-in. wheels. It is equipped with pressure gage, safety valve, and all necessary control valves.—**Livingstone Engineering Co., 100 Grove St., Worcester 5, Mass.**

ARC WELDER — Selenium-rectifier-type dc arc welder is available in two models—40 to 250 amp and 60 to 375 amp. Features include: Arc start surge; electric current control permitting remote-control operation; no moving parts; instantaneous voltage recovery producing greater arc flexibility; does not require high starting current; quiet operation; reduced arc blow resulting in no accidental polarity reversal. Standard input requirements are 220/440-v 3-phase 60-cycle current.—**Miller Electric Mfg. Co., Appleton, Wis.**

Speed and economy are more important than ever in these uncertain times. That's why Robt. E. McKee General Contractor, Inc., is using 8 Whiteman Power Buggies to pour 51,000 yards of concrete and rocklite on the big Statler Hotel project in Los Angeles. One Power Buggy does the work of six men with wheelbarrows... speeds concrete, sand, brick or mortar over soft earth, up 25% grades, to upper floors, over light scaffolds, through doorways. Carries 12 cu. ft. or 2,000 lbs., yet weighs only 692 lbs. Positive "in-gear" control permits partial or full dumping and return. Travels up to 16 mph. Powered by 7.5 hp, 4-cycle, air cooled engine, has automatic clutch and speed changer. Dependable performance and durability proved over many years. Priced to pay for itself in a short time. Send coupon now for details and name of your nearby distributor.

Climbs 25% grades with ease.

Positive "in-gear" mechanism of dump and return.

Also available with dumping stake-type body.

Whiteman Power Buggy

SEND NOW!

WHITEMAN MANUFACTURING CO.
3249 Casitas Ave, Dept C, Los Angeles 39, Calif.
Please send me name of distributor, literature and prices on Whiteman Equipment.

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Company_____
Address_____
City_____ Zone____ State_____

BARNES

"33,000 FOR 1" PUMPS

the line with 3 unmatched firsts

1ST IN PUMPING ECONOMY –

Barnes Automatic Centrifugals deliver not 1,000—not 10,000—but 33,000 gallons of water for each gallon of gas used. That's equal to 4⅛ railroad tank cars filled and overflowing. And that's pumping economy unmatched!

1ST IN SURE OPERATION –

Barnes Self-Priming Centrifugals will prime with pump body filled as low as ⅓ normal water level. Exclusive Barnes Peri-Prime feature gives surer, faster priming—with no loss in pump efficiency in recirculation!

1ST IN LASTING SERVICE –

Barnes Centrifugals are really built! The heavy duty body and impeller defy wear! The Barnes Life-time Super Seal, with its case-hardened bearing surfaces assures trouble-free service for job after job — year after year!

THE "33,000 FOR 1" LINE

FOUNDED 1895

Barnes

MANUFACTURING CO.
MANSFIELD, OHIO

ALL ROPES *look* ALIKE... but

IN Wickwire Rope

TESTING GOES

Precision polishing and high powered magnification enable us to go 100 times beyond normal vision in examining Wickwire Rope steel for classification of grain size to McQuaid-Ehn* standards.

100 times beyond normal vision

Uniformity of grain size in steel assures longer life and greater reliability in Wickwire Rope.

Right down the line...starting with the melting and refining of our steel ...and continuing through heat treating processes and cold drawing of the wire, we maintain complete control over the grain size of steel used in Wickwire Rope.

This quality control of basic properties is possible only with a company whose operations are fully integrated from the actual making of the steel to the stranding of the finished rope. It's just one more example of how Wickwire goes "beyond specifications" to give you—at market prices—wire rope that is unsurpassed for reliability, safety and longer life.

See your local Wickwire distributor for the right rope for your particular requirements. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

*For detailed information on the McQuaid-Ehn test and what it means to you in superior rope performance, write to Wire Rope Sales Office, Wickwire Spencer Steel Division of C. F. & I., Palmer, Mass.

WICKWIRE ROPE

CF&I

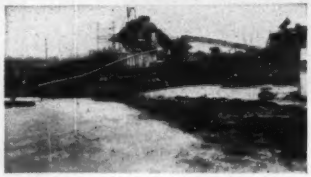
A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Casper • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Houston • New York Odessa (Tex.) • Philadelphia • Phoenix • Salt Lake City • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

Ever hear Eagles Sing?



IT SOUNDS like a cash register symphony. A couple of Eagles are singing at the plant of Quillin Bros., Lodi, Ohio, shown here. Material from the bottom deck of screen is chuted to an Eagle Water Scalping Tank which concentrates solids and flows off excess water. The concentrated material flows to an Eagle Washer-Classifier-Dehydrator, directly below. Adjustable U-shaped weirs enables Quillin Bros. to retain the mesh they want when they want it. Any contamination in sand is washed away. Material goes to bins with excess moisture removed. Cost per yard for processing this premium material is figured in cents. If your profit picture isn't what it should be let Eagles sing for you! Ask for Catalog 47 — Washers, and Bulletin 150 — Water Scalping Tanks.

EAGLE BREAKER BALLS—Handy Around the Quarry or Pit!

Made of a tough, special semi-steel. For breaking man-size rock down to crusher size, knocking down banks, breaking up scrap or concrete. Replaceable hooks. Four standard sizes: 1500 lb., 2000 lb., 3000 lb., 4000 lb. Also special sizes. Ask for Bulletin 950.

Log Washers, Screw Washers - Classifiers - Dehydrators, "Swintek" Dredging Ladders, Water Scalping Tanks, Cinder Crushers and Grinders for Concrete Products Plants, Shale Planers, Pile Drivers, Breaker Balls.

161 Holcomb Ave. • Des Moines, Iowa

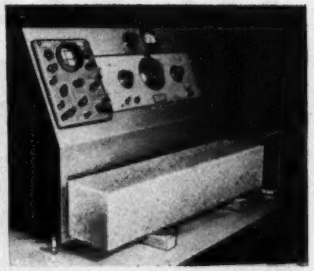
Stang **WELLPOINT SYSTEM**

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W **STANG** CORPORATION

2 Broadway, New York 4, N. Y. | 2123 S. 56th St., Omaha, Nebr. | 8221 Atlantic Ave., P.O. Box 631, Bell, Cal.



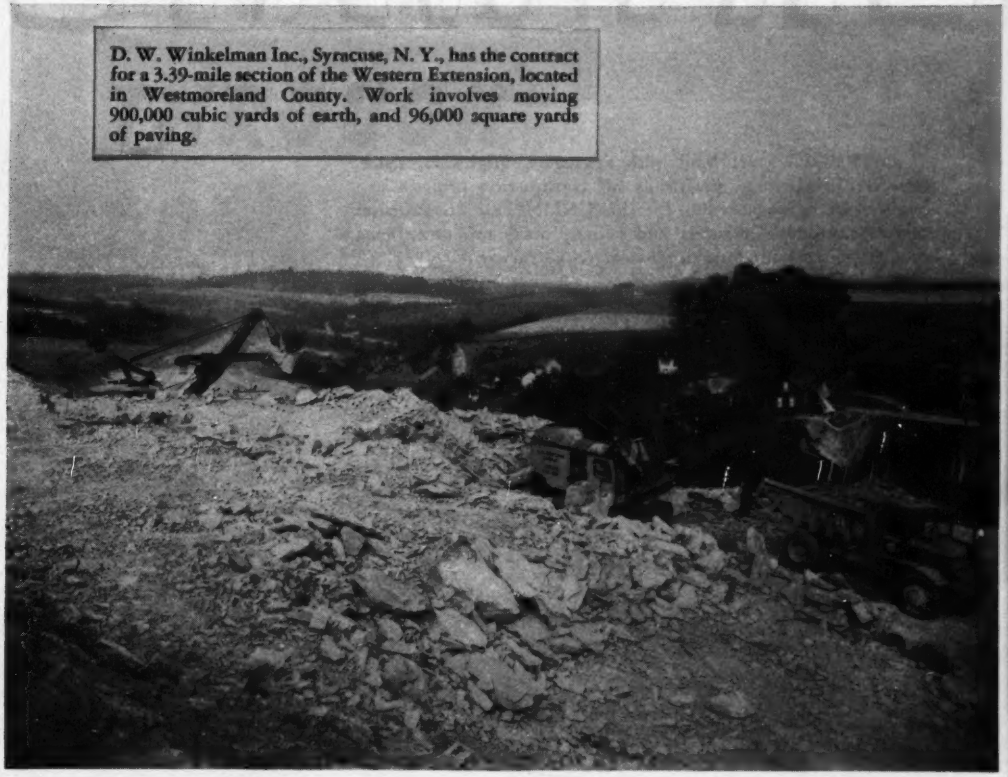
METER FOR ELASTICITY MEASURE—Electro Sonometer for determining resonant frequency of any solid mass is developed from basic designs of the Portland Cement Assn. It consists of two units—the control cabinet and the portable pick-up. Test image obtained on cathode ray oscilloscope is used to determine the flexural and torsional modes of vibration. Information from these tests can be used to determine Young's modulus of elasticity.—**Electro Products Laboratories, 4501 Ravenswood Ave., Chicago 40, Ill.**

AIR-COOLED DIESEL ENGINE—Light-duty diesel is available in single- or two-cylinder units, having continuous hp ratings of 5.25 and 10.5 at 1,800 rpm. Weight of the Petter AVA single engine is 390 lb.; of the two-cylinder unit, 550 lb. Cooling of the injector nozzle is accomplished by inserting an aluminum-finned sheath between the head and nozzle body.—**Aboe, Inc., 350 Fifth Ave., New York 1, N. Y.**

WHEEL-TRACTOR LOADER—Hydraulic-torque-converter drive and a new-design clutch-type transmission are features of the T8L-10 Tracto-Loader. It has a ¾-yd hydraulically controlled bucket, with ample bucket clearance to reach and load average-size dump trucks. Power is provided by an Allis-Chalmers 40.5 brake-horsepower gasoline engine. Weight is 10,650 lb.—**Tractomotive Corp., Deerfield, Ill.**

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling on Western Extension of the Pennsylvania Turnpike



D. W. Winkelman Inc., Syracuse, N. Y., has the contract for a 3.39-mile section of the Western Extension, located in Westmoreland County. Work involves moving 900,000 cubic yards of earth, and 96,000 square yards of paving.

THE Western Extension of the Pennsylvania Turnpike is another big and important project where the majority of contractors rely on Gulf to help keep equipment delivering top performance.

Leading contractors, like D. W. Winkelman, Inc. for example, know from experience that Gulf quality lubricants provide an extra margin of protection against mechanical delays. And that Gulf fuels insure full engine power and efficiency.

Then, too, they appreciate the engineering counsel Gulf provides to assure the most suitable lubricants and fuels for every unit and operating condition. And Gulf's prompt delivery service is also important to them.

Let us discuss with you how Gulf products and services can help you on your next job. They are available to you through more than 1200 conveniently located warehouses. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.

FIFTY YEARS OF SERVICE
1901 GULF 1951
PETROLEUM AND ITS PRODUCTS

SKYWAYS

AIRPORTS are built with aggregate. Highways, dams, factories, bridges . . . practically *all* construction projects . . . begin with aggregate. But for the UNLIMITED construction that meets today's industrial and military needs, millions of tons of aggregate must be produced *at increasingly lower cost!*

Cedarapids equipment gives you the high capacity and economical operation that reduce per ton production costs . . . it assures the high quality finished products that meet exacting specifications . . . it brings you OPPORTUNITY UNLIMITED for your share of profit on future big jobs.

Whether you need single units, complete aggregate or asphalt plants, or soil compaction machines, be sure you have the best . . . see your Cedarapids distributor for the whole story.

Cedarapids
Built by IOWA
headquarters for
Quality EQUIPMENT

MASTER TANDEM

HERE'S the largest of the Cedarapids complete portable crushing and screening plants . . . a high capacity giant when big volume is required. For average size gravel jobs, use the Junior Tandem . . . for the smaller jobs, pick the Pitmaster. Add a Cedarapids Portable Primary and you have a rock plant. There's a size and type of Cedarapids equipment, for aggregate or black top, to meet any specification, any quantity, every pocketbook.

VIBRATORY SOIL COMPACTOR

THE Cedarapids Compactor operates on an entirely new principle . . . the application of controlled vibration through the pneumatic tires of a heavy roller. This powerful compacting action saves time and dollars by reaching specification densities in fewer passes.

UNLIMITED

THROUGH LOW COST AGGREGATE

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

"Bil-Jax scaffolding was really valuable to us..."

FAST • SAFE • LOW-COST

Bil-Jax takes only a fraction of the time needed to erect or dismantle ordinary steel scaffolding. Braces are removed by simply loosening wing nuts a few turns. It is never necessary to completely remove wing nuts, and no tools are required. Made of high-carbon steel.

Investigate Bil-Jax sale and rental plans.

Write for free Bulletin No. B-4

... say RAY & SEWELL General Contractors, Columbia City, Indiana

STANDARD UNIT

"Thought you'd be interested in knowing that the Bil-Jax Scaffolding was really valuable to us on the apartment house project in Fort Wayne. We used 90 towers around this building. Our men enjoyed working on it and they never had an uneasy moment. It was fast to set up and take down, because we didn't have to remove any wing nuts on either operation."

SELECT A Sterling THAT FITS YOUR JOB!

TUBULAR STEEL FRAME

There's a Sterling Barrow for every type of hauling job, whether it's dry, bulky materials like sawdust or heavy industrial loads like castings or steel parts. Also special barrows for brick, tile, coal, concrete block and similar materials. All barrows are scientifically designed, well balanced and sturdily constructed for a long service life. Choice of wood handles or tubular steel frame, steel wheels or pneumatics. Write for new Sterling Wheelbarrow Catalog No. 61.

(Above) Model D3½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

(Right) Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

12 SPOKE STEEL WHEEL

PNEUMATIC TIRED WHEEL

Shipments as fast as present conditions permit.

WOOD HANDLE BARROW

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

NEW EQUIPMENT BRIEFS

Textured finish for wood and masonry structures is fused to the surface by air-blasting. This siding is said to be waterproof and to provide complete insulation. Produced by: Re-Nu-It Corp., New York 18, N. Y.

Aluminum solder flux can be reactivated after drying out by addition of tap water. The All-State flux (All-State Welding Alloys Co., Inc., White Plains, N. Y.) can be used with aluminum solder rods of any commercially available brand.

Mercury safety switch is recommended for use in hazardous, explosive locations. Actuating linkage is mechanical in nature, obviating the possibility of any spark. Made by: Panalarm Products, Inc., Chicago 26, Ill.

Wood folding rules with engineers' markings are available in two styles —with double or single-edge graduations. Made by: Eagle Rule Mfg. Corp., New York 59, N. Y.

Fiberglas building insulation is now available in longer rolls requiring less cutting and fitting, and fewer packages to handle. Fiberglas is a product of: Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Extra-long staples for attaching copper and brass tubing accommodate ⅜- or ½-in. nominal sizes. Made of copper, they have steel cores for strength. Tube-Tite staples are fabricated by: E. H. Titchener & Co., Binghamton, N. Y.

Pengo earth augers are now produced in 10- and 12-in.-hole sizes. These augers fit Highway, Williams, and Trackson earth-boring machines. Adapters are available for use on other makes. Pengo augers are made by: Petersen Engineering Co., Santa Clara, Calif.

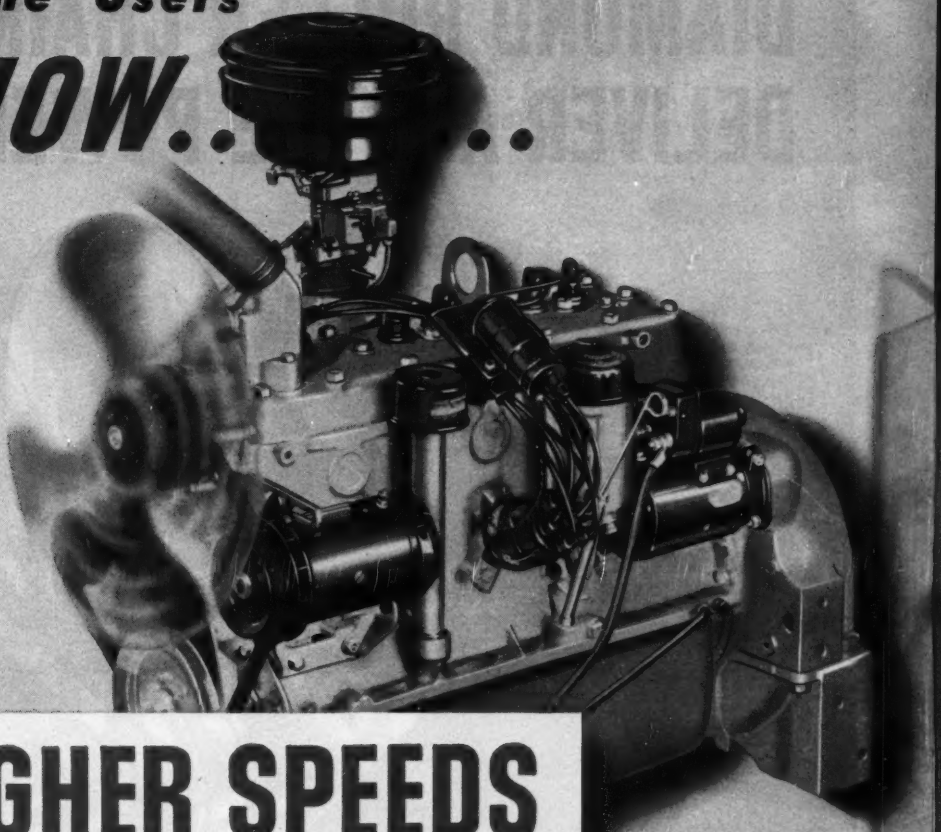
Oil-filter cartridge fits V-type 4-cyl Wisconsin air-cooled engines. Micro-Fine cartridge was developed in collaboration with Wix Accessories Corp.

Chromated anti-rust paints can be applied without previous wire brushing or scraping. Rustrem chromate special is produced by: Speco, Inc., Cleveland 9, Ohio.

Fluorescent light bulb with screw-in base fits standard lamp sockets. The Lite-Mite is a product of: Stocker & Yale, Marblehead, Mass.

Brik-Toter portable conveyor is now available with gasoline power unit for use where electricity is not available. Made by: Mar-Rail Conveyor Co., Pawtucket, R. I.

Now Industrial Engine Users KNOW...



Chrysler Industrial 7—one of eight basic models.

HIGHER SPEEDS

MEAN BETTER PERFORMANCE AND LOWER COSTS!

For years, operators of gasoline powered industrial equipment, and the engineers who design it, have known that higher speed engines deliver better performance.

Now Chrysler has proved that you can have all the advantages of higher speed—and *lower costs, too.*

Continuous Chrysler research in higher alloy steels and famed Chrysler engineering have produced an industrial engine that runs faster and lasts longer. An engine that *costs less to buy and less to operate!*

A letter of inquiry will bring an engineer to your desk, well qualified to discuss application to your equipment. Address

Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

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HORSEPOWER WITH A PEDIGREE

DIAMOND ROLLER CHAINS DELIVER ALL THE POWER!

Diamond Roller Chains transmit full engine power from the hydraulic coupling directly to the Center Drive Pinion on the new Series 50 Lorain Moto-Cranes.

● For over a quarter century, operators of construction and road machinery have found, by actual on-the-job performance records, that Diamond Roller Chains have been proven the most rugged, efficient and dependable.

Rolling at every point of contact, Diamond Chains operate with frictionless ease and maintain 98% to 99% efficiency. Their uniformity of construction and tremendous reserve strength enable them to resist wear and fatigue, as well as shock loads and long hour service with minimum attention. There is little bearing wear because there are no separating forces such as are present in gear drives.

This superior all around performance is the result of Diamond's 61 years of specialization in roller chain development, and accounts for their ever widening preference in the construction field.

DIAMOND CHAIN COMPANY, Inc.
Dept. 418, 402 Kentucky Avenue
Indianapolis 7, Indiana

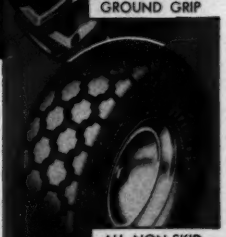
Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND ROLLER CHAINS

TIRES that stand up longer...
SERVICE to see that they do

BOTH ARE YOURS AT
Firestone



FIRESTONE TIRES DO STAND UP LONGER—

Because — More materials go into them — Their treads are extra heavy . . . Their sidewalls are double thick . . . Their bodies are reinforced with four extra tread plies.

Because — Better materials go into them — Their rubber is extra tough, extra resistant to cuts, scuffs, and snags. The rayon cords in their body structure are Gum-Dipped under tension for enduring strength and stretch resistance.

AND... FIRESTONE SERVICE HELPS YOU GET THE *MOST* OUT OF YOUR TIRES—

Because — Your Firestone Service Representative will see that you get the right type of tire for the job and the right size and ply tire for the load.

Because — He will also at regular intervals inspect your tires and furnish the necessary service to see that you get the most out of them.

CALL YOUR NEARBY FIRESTONE DEALER OR STORE FOR THE BEST IN TIRES AND TIRE SERVICE

WHEN ORDERING NEW EQUIPMENT SPECIFY FIRESTONE GUM-DIPPED TIRES

Listen to the Voice of Firestone on radio or television every Monday evening over NBC

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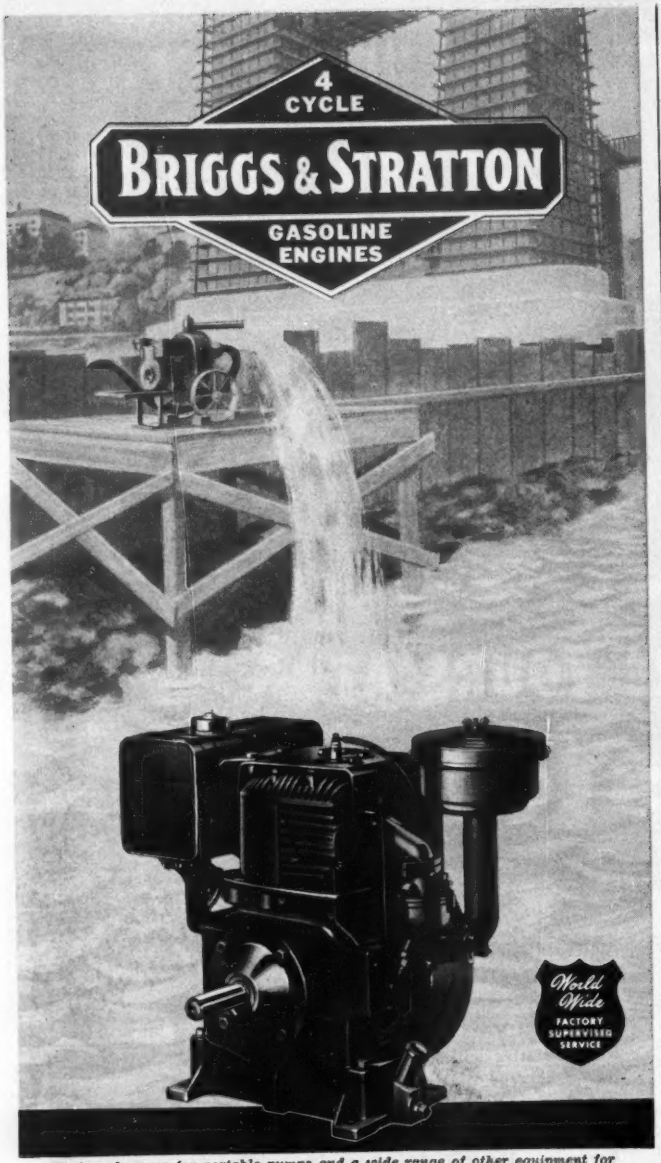

Preferred power for portable pumps and a wide range of other equipment for the construction industry — the world's most widely used single-cylinder gasoline engines on machines and tools for industry, construction, railroads, oil fields, etc., and on appliances and equipment for farm and home.

THERE are more Briggs & Stratton 4-cycle, air-cooled, single-cylinder engines in service than all other makes in their field combined.
Briggs & Stratton Corporation,
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In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

LUBRICANT DATA BOOK—Information on Lubriplate lubricants and their uses are contained in this 54-p booklet. Booklet 1-50 describes the control and effects of friction, lists the various Lubriplate products, the principal applications of each, and contains other valuable information. A special listing covers the Lubriplate recommendations for construction equipment.—**Fiske Bros. Refining Co., Lubriplate Div., 129 Lockwood St., Newark 5, N. J.**

ELECTRIC DRILLS—Care and application of portable electric drills are discusseed in detail in this 36-p booklet. It features helpful tips on how to achieve the best results with this equipment. Several sections are devoted to a step-by-step explanation of technical drilling operations, such as drilling pilot holes, drilling concentric in a scribed circle, and the proper drilling of various materials. Tables and charts list drill sizes and speeds required for specific types of jobs.—**Mall Tool Co., 7730a S. Chicago Ave., Chicago 19, Ill.**

PLASTER - MORTAR MIXERS — Method of comparing construction features, dimensions, and capacities of various types and sizes of plaster-mortar mixers is provided in this 8-p catalog. It features photographs depicting exclusive Kwik-Mix features; and schematic drawings listing detailed dimensions of the 6- and 10-ft units.—**Kwik-Mix Co., Subs. Koehring Co., Port Washington, Wis.**

LUMBER PURCHASING GUIDE—1951 Where-to-Buy guide is now off the presses. Detailed information is given on sawmills, re-manufacturing plants, timber fabricators, a wood pipe and tank manufacturer, and wood-treating plants in the Douglas fir region of western Washington, Oregon, and northern California.—**West Coast Lumbermen's Assn., 1410 S. W. Morrison St., Portland 5, Ore.**

EYE-SAFETY GUIDE—Revised issue of the "AO Eye Safety Guide" lists eye-hazardous occupations and recommended protection for specific eye hazards. Completely illustrated, it is designed as a reference chart and contains a summary of recommendations. Types of protective devices are listed.—**American Optical Co., Southbridge, Mass.**

TRU-LAY *Preformed* Wire Rope

- **PERFORMS BETTER**
- **HANDLES EASIER**
- **SAFER TO USE**
- **LASTS LONGER**

Available
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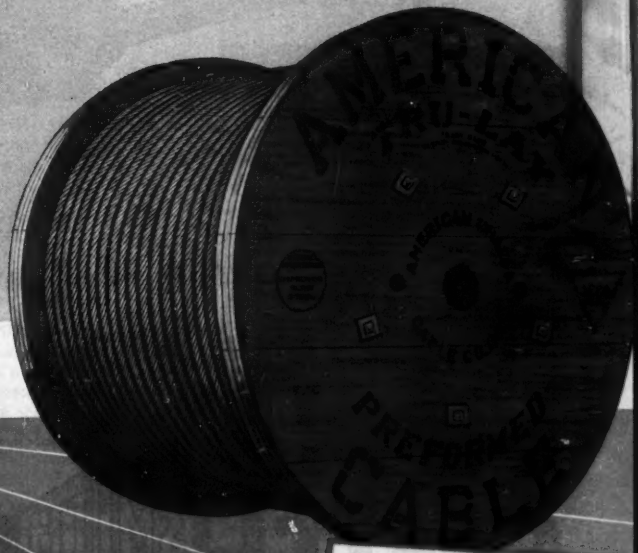
ALL AROUND AMERICA



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Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

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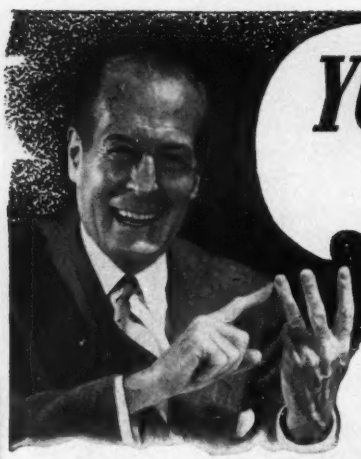
In Business for Your Safety

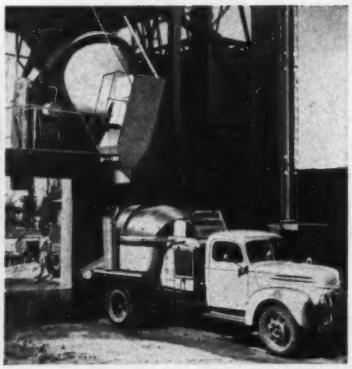
ALSO MAKERS OF THE COMPLETE LINE OF
Registered
WIRE ROPE SLINGS

YOU SAVE 3 Ways
with Smith-Mobile LOADLIMIT models



MEET HIGHWAY WEIGHT LIMITS
with a Smith-Mobile LOADLIMIT Model. You can easily convert it to a Standard Smith-Mobile Truck Mixer or Agitator. And a Standard Model can easily be converted to a LOADLIMIT Model.

LOADLIMIT Models are available in 3, 4½, 5½ and 6½ yard sizes, with higher ratings for agitators. All carry NRMCA rating plates.



HERE'S a WINNING COMBINATION!
Smith Tilting Mixers and Smith-Mobile Agitators enable you to deliver better concrete with speed and certainty, at low cost. They have a record of achievement that has never been equaled in the industry.

1 **LOWER INITIAL COST** — By eliminating parts and units not absolutely vital to mixer operation, price of mixer is greatly reduced. A less expensive LOADLIMIT Model can be mounted on a lighter truck, resulting in a further saving in initial investment.

2 **LOWER OPERATING COSTS** — Less dead weight means bigger payloads without exceeding highway weight limits. A lightweight LOADLIMIT Model has less overall width, maneuvers more easily, travels faster. Discharge is easier since there is no closing door to open and close.

3 **LOWER MAINTENANCE COSTS** — Replacements and repairs are seldom necessary. A LOADLIMIT Model has the same sturdy construction as a Standard Smith-Mobile and carries the same guarantee. With unnecessary parts removed, there is less to maintain. The closing door is eliminated. No seal troubles.

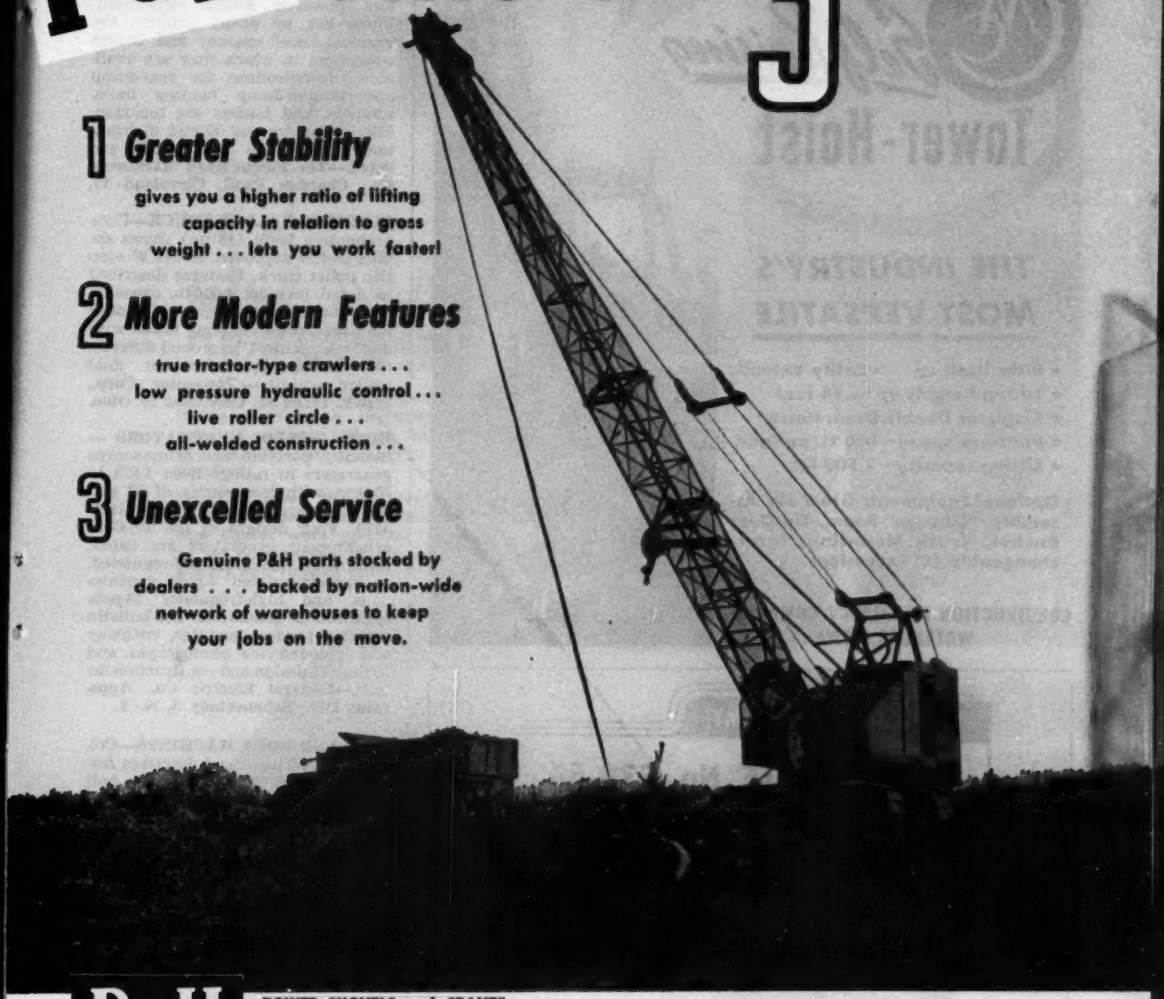
Ask your nearby Smith Distributor to give you all the LOADLIMIT facts.

THE T. L. SMITH COMPANY
2851 N. 32nd St., Milwaukee 45, Wis., U.S.A.

SMITH MOBILE

For BIGGER and BETTER Concrete Mixers and Truck Mixers Look to SMITH

P&H PAYS OFF 3 WAYS



1 Greater Stability

gives you a higher ratio of lifting capacity in relation to gross weight . . . lets you work faster!

2 More Modern Features

true tractor-type crawlers . . .
low pressure hydraulic control . . .
live roller circle . . .
all-welded construction . . .

3 Unexcelled Service

Genuine P&H parts stocked by dealers . . . backed by nation-wide network of warehouses to keep your jobs on the move.

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POWER SHOVELS and CRANES
4494 W. National Ave.
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SEE YOUR P&H DEALER

P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below—with hoist and digging drums on one shaft, the need for crawler shafts and gearing is eliminated. You also have a choice of gas, diesel, or electric power. Ask for literature on the size you need.

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POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PUR-PAK HOMES

MC Self-Raising Tower-Hoist

THE INDUSTRY'S MOST VERSATILE

- Picks itself up • Easily extends
- Lifting heights up to 94 feet
- Single or Double Drum Hoists
- Platform speed—100 ft. per min.
- Lifting capacity—2,500 lbs.

Optional Equipment: Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10' Extensions.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

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"LUBRIPLATE No. 630-AA is Practically a Universal Lubricant"

The Spokane Portland Cement Company of Irvin, Washington writes, "With the introduction of LUBRIPLATE No. 630-AA we reduced the number of lubricants we were using from ten to two. LUBRIPLATE No. 630-AA might almost be considered a *UNIVERSAL LUBRICANT*".

1. LUBRIPLATE reduces friction and wear
2. LUBRIPLATE prevents rust and corrosion
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Write today for case histories of savings made through the use of LUBRIPLATE in your industry.

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The Different LUBRICANT!

DEALERS EVERYWHERE, consult your Classified Telephone Book

DIESEL-POWERED EUCLIDS—Two new 16-p booklets (EGM-1 and ECE-10) cover Cummins and General Motors powered Euclid equipment. These list, by model number, the various diesel engines and Euclid equipment in which they are available. Specifications for rear-dump and bottom-dump hauling units, scrapers, and loaders are included. Engine dealers and Euclid distributors in the USA and Canada are listed.—**The Euclid Road Machinery Co., Chardon Road, Cleveland 17.**

ELECTRIC PALLET TRUCK—Comprehensive book (18 pp) shows details of the improved Model W electric pallet truck. Features described in detail include: 4,000-lb. capacity, high maneuverability, new contactor panel, positive-acting brake with dead-man control, improved differential action, and all-rubber dual trailer wheels.—**Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.**

HIGH - SPEED GENERATORS — Standby, portable, and prime-source generators in ratings from 1.875 to 50 kva with frequencies of 60 and 400 cycles are listed in Bulletin GEA-5470. Four designs of the Tri-Clad synchronous generators are listed: Externally regulated, self-regulated, packaged-regulated 4-pole synchronous, and high-frequency 14-pole synchronous generators. The bulletin features product pictures, cut-away and exploded-view photographs, and listings of design and construction details.—**General Electric Co., Apparatus Div., Schenectady 5, N. Y.**

PIPE AND BOLT MACHINES—Color folder pictures and describes feature of Beaver pipe and bolt machines. Also listed are: Power drives, pipe cutters, and the Model 77 pipe threader for use with electric power drives.—**Beaver Pipe Tools, Inc., 350 Dana Ave., Warren, Ohio.**

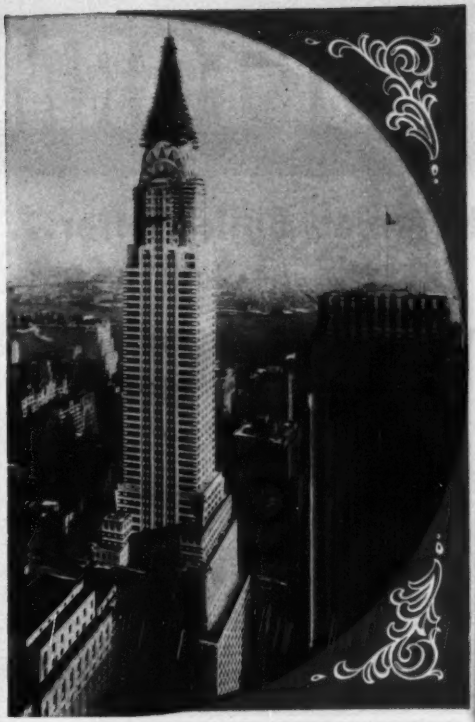
PLASTER-BONDING KIFS—Kifs, a special device for bonding plaster to concrete, are described in this 4-pager. The Kifs are illustrated to show their special features, and text, accompanied by photographs, shows how they are used. Bulletin contains both general and specific information on the features, uses, cost, and application of these Kifs.—**Buffalo Products Inc., 315 Babcock St., Buffalo 10, N. Y.**

WATER-TANK PUMP CONTROLS — Pressure-operated pump controls that automatically maintain water levels in elevated tanks are described in 4-p Bulletin 1100. It features a description of the two-bellows design of the Autocon Tanktrol and outlines results to be expected from this type of control. Thoroughly illustrated, the bulletin contains complete specifications and dimensions.—**Automatic Control Co., 1005 University Ave., St. Paul 4, Minn.**

33 YEARS OF "KNOW-HOW"

As early as 1918 Perfection Bodies and Hoists were being designed for the future haulage needs of such jobs as the construction of the Chrysler Building.

In 1930, when the Chrysler Building was being completed, Perfection Hoists and Bodies were already recognized as an outstanding leader in advance design and rugged construction.



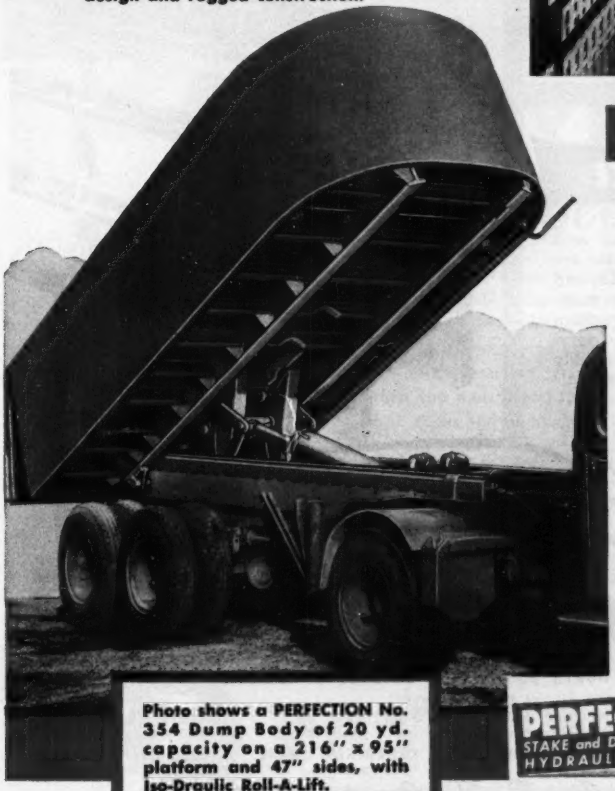


Photo shows a PERFECTION No. 354 Dump Body of 20 yd. capacity on a 216" x 95" platform and 47" sides, with Iso-Draulic Roll-A-Lift.

PERFECTION

Builds for Tomorrow

Every year trucking demands require increased capacities. Every year Perfection looks ahead – devises more rugged designs – builds to greater precision, to carry these greater loads, and to give you year after year of the most profitable performance possible.

THE PERFECTION STEEL BODY CO.
Galion, Ohio, U.S.A.

PERFECTION
STAKE and DUMP BODIES
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FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES • FOR ANY USE

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Help you Build Better... Faster...at Lower Cost

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Whether your job is large or small—you get *complete* engineering service. Universal's concrete form specialists . . . trained to think in terms of faster forming and economy . . . will analyze your job . . . recommend methods, materials and techniques . . . supply form layouts . . . details . . . bills of material—to simplify and speed your job.

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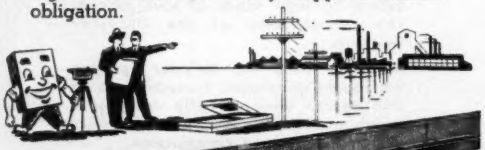
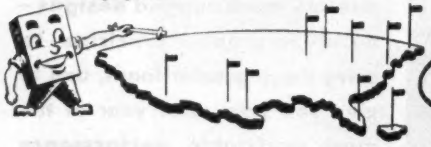
Universal's Field Service Engineers are always available to give you on-the-job assistance to help you get maximum value and utility from Universal Products. When you encounter a difficult forming problem—a call to the Chicago Office—or any of the 10 Universal Branches—will bring a specialist to your job in a few hours. Builders everywhere have taken advantage of this Service—always supplied without obligation.



NATION-WIDE SERVICE

Ten strategically located, fully staffed and equipped Branch Offices and Warehouses are ready to supply you with UNI-FORMS and UNI-FORM Accessories, or any of the many Universal Products for concrete construction. Take advantage of Universal's integrated service and supply network to speed and simplify procurement of your concrete forming materials and equipment.



Over 10,000,000 Sq. Ft. of **UNI-FORMS** *now in use*

UNI-FORMS

- A complete concrete forming system—automatically accurate.
- Ready to use Plywood faced steel-framed forms.
- Guarantee fast starts . . . lowest all around cost.
- Save TIME . . . LABOR . . . MATERIAL.

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Service Wherever You Build... Coast-to-Coast

4 wheel drive PAYLOADER

Traction-Speed-Mobility

You get more of everything with this rubber-footed tractor-shovel. With its combination of 4-wheel drive and large pneumatic tires the Model HM PAYLOADER gives you fast-action traction on all kinds of footing — on sand, stone, snow, clay or mud. It gives you crawler-like traction at far less maintenance expense, PLUS speed when you want it and the ability to work on pavements and travel over streets and highways at 16 M.P.H.

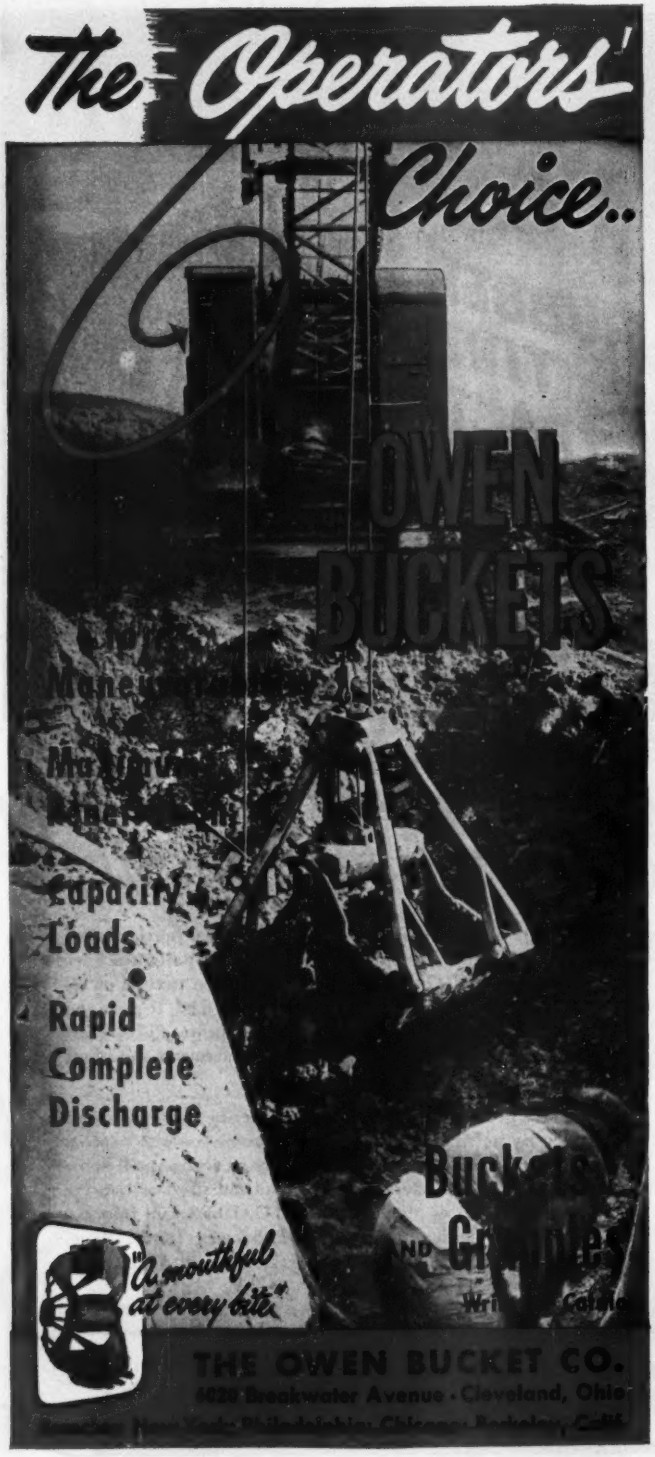
You also get easy operation and maneuvering speed thanks to power-boosted steering and full reversing transmission with 4 speeds reverse as well as forward. Once you see one in action you'll know why hundreds of contractors as well as road and street officials are highly satisfied users of Model HM PAYLOADERS. Full information on this and other sizes of PAYLOADERS is yours for the asking. The Frank G. Hough Co., 706 Sunnyside Avenue, Libertyville, Illinois.

WRITE for literature on any size **PAYLOADER**: the 1½ yard Model HM; the 1¼ yard HY; the ¾ yard HF; the ½ yard HE; the 12 cu. ft. HA. There is no obligation.

SAY "HUFF"

PAYLOADER®

THE FRANK G. HOUGH CO. · Since 1920



REVOLVER CRANES—Illustrated booklet (24 pp) features large, dramatic pictures of some of the nation's greatest dam jobs including Garrison, Friant, Grand Coulee, and Bull Shoals. These pictures illustrate how contractors, engineers, and construction men use the power and reach built into these revolver cranes.—**American Hoist & Derrick Co., 63 Roberts St., St. Paul 1, Minn.**

VALVES AND FITTINGS—Catalog 50V describes an entire line of bronze and iron-body valves. It is planned for quick, easy reference. Listings are complete and include photographs, dimensional diagrams, price, weight, sizes, and dimensions. A listing of accessories and several pages of essential engineering data complete this 112-p catalog—**Stockham Valves & Fittings, Box 2592, Birmingham 2, Ala.**

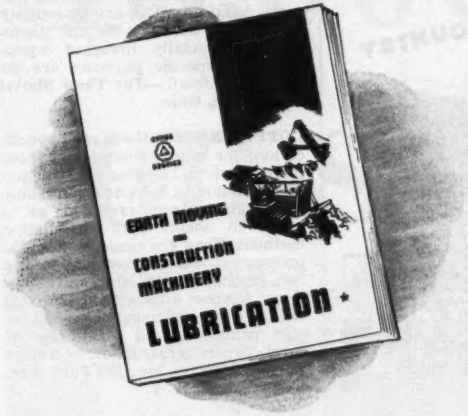
NORDBERG MACHINERY — All types of equipment manufactured by Nordberg are listed in this 28-p catalog. Items listed in Bulletin 187 include: 2- and 4-cycle diesels, gasoline marine engines, Symons cone crushers and screens, mine hoists, and air and gas compressors. In addition, the bulletin gives the historical background of the company, and describes its manufacturing facilities. — **Nordberg Mfg. Co., Chicago & Oklahoma Aves., Milwaukee 7, Wis.**

TIMBER CONSTRUCTION — Booklet describes timber construction for military, commercial, and industrial buildings. It presents advanced uses to which the Teco connector system of timber construction has been put to use in many types of buildings. This system employs wedge-fitted split-ring connectors and Trip-L-Grip framing anchor. The booklet also discusses glue-laminated timber construction and decorative lamella construction. A series of drawings depicts practical applications of the Teco system. — **Timber Engineering Co., 1319 Eighteenth St., N. W., Washington 6, D. C.**

APPRENTICE TRAINING—Pocket-size pamphlet outlines two ways in which apprenticeship is said to net worthwhile returns. In addition, the pamphlet lists other publications on the subject of apprenticeship; regional offices of the Bureau of Apprenticeship, U. S. Dept. of Labor; and State apprenticeship agencies.—**Bureau of Apprenticeship, U. S. Dept. of Labor, Washington 25, D. C.**

AIR-ENTRAINMENT TESTER — Chart used in conjunction with the Press-Ur-Meter speeds the testing of air-entrained concrete. This chart permits a rapid determination of the specific gravity and moisture content of aggregates. The Press-Ur-Meter is a pressure-type air meter for testing air-entrained concrete.— **Charles R. Watts & Co., 4121 Sixth Ave., N. W., Seattle 7, Wash.**

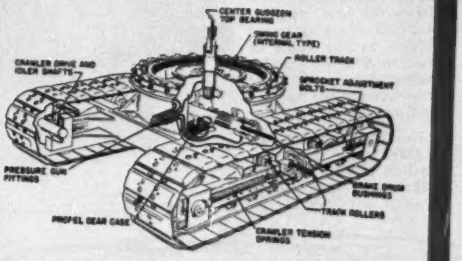
Best-Telling Book



CONTENTS:

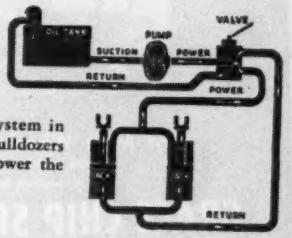
WHAT LUBRICANTS
FOR WHAT APPLICATIONS
—AND WHY

YOUR TYPE of construction equipment—engines included—is plainly, soundly covered in this book. You'll be able to judge for yourself which types of lubricant best suit various machines and conditions. You can make your own point-by-point check-up on the complete line of Cities Service lubricants—engineered in types and grades sure to be more than a match for fierce loads, weather and terrain. The performance records prove how sharply maintenance costs go down... how steadily grueling schedules are met... with Cities Service lubricants on the job. Call the nearest Cities Service office for competent aid, or write us direct.



"FIG. 23

Shows internal type open gears of swing rack and one method of lubricating trunion and other shaft bearings... The 'propel' gears are enclosed and oil lubricated. The crawler track and other parts lubricated through pressure gun fittings require grease. See lubrication chart for proper type and grade..."



"FIG. 33

Hydraulic system in use on some bulldozers to raise or lower the blade."

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Compressor Oils Hydraulic Oils
Multi-Purpose
GEAR OILS
HEAVY DUTY MOTOR OILS

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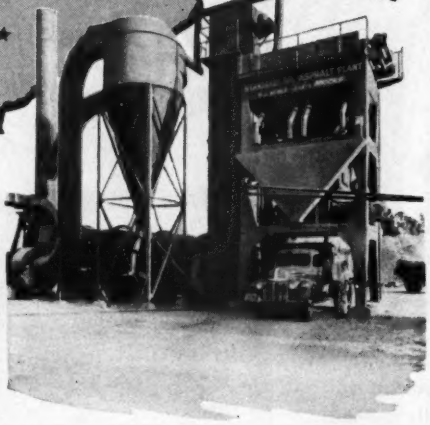

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POWER-SHOVEL CATALOGS — Two bulletins are available from Thew. One describes use of Thew-Lorain cranes and shovels in pipeline construction; the other discusses the use of cranes in industrial material handling. Both are thoroughly illustrated with on-the-job photographs. Specially designed equipment for specific purposes are described in detail.—**The Thew Shovel Co., Lorain, Ohio.**

COPPER ROOFING—Master specifications for copper roofing and sheet metal work in building construction are available in booklet form. These specifications are provided as a guide to sheet-copper installation methods. They are based on a 1-year program of design development and test combined with field investigations. Another booklet is distributed with the specifications, discussing design principles and techniques of sheet-copper construction. — **Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.**

CARBURETOR PREHEATER—Cold-starting aid for automotive engines is described in this data sheet. Sheet explains how Quik-Start carburetor operates, how it is installed, and its features of construction. — **Kemode Mfg. Co., Inc., 161 W. 18th St., New York 11, N. Y.**

HIGH-SPEED SCRAPER; WAGON —Brochure describes the 2C800 Heiliner with its interchangeable scraper and bottom-dump wagon. Featured are job pictures, cutaways, and a list of specifications. Highlighting the brochure is data on the Heil Hydro-S. . and Super-Axle, and on the Cummins 200-hp diesel engine that powers the unit. Forty refinements of the Heiliner are illustrated in a giant cutaway.—**The Heil Co., 3002 W. Montana St., Milwaukee 1, Wis.**

ARC-WELDING STUDS— Standard and special studs with arc shields for stud-welding applications are listed in this 4-p folder. The folder contains a description of the principal features claimed for the KSM studs, including economy, maximum stud strength developed, strong threads, minimum fillet diameter, precision flexing of stud, and scientifically designed arc shields.—**KSM Products, Inc., 6512 Park Ave., Merchantville 8, N. J.**

HOME-WIRING HANDBOOK — Third edition of 135-p guide covers planned wiring of homes in the popular-priced group. Handbook emphasizes the use of safety and functional design. Described in detail in Booklet B-3510-B are four degrees of electrical living, including minimum outlet requirements, selection of number and type of circuits, circuit protection, and communication systems.—**Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.**

15,000 trips -on schedule

SOMETIME this spring, the 15,000th trip will be made by a pair of one-yard concrete buckets . . . and pouring will be completed on the State of Michigan's new 10-story Northville mental hospital, near Detroit.

O. W. Burke Co. of Detroit, general contractors on this job, wanted absolute assurance of steady, dependable hoist performance. So they made the same decision that thousands of other builders have made . . . to use American General Purpose Hoists.

This $6,500,000 project is moving smoothly toward on-schedule completion. For such jobs—or $6500 jobs—or $65,000,000 jobs—you cannot make a safer choice than American hoisting power!

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DRY DIGGING?.....
THIS PICTURE SPEAKS FOR ITSELF!

We add a few interesting facts:

1. This is the Berkley approach to the Elizabeth River Tunnel, part of the $18,000,000 tunnel-bridge project between Norfolk and Portsmouth, Va., on which Merritt-Chapman & Scott Corp., New York, and Tidewater Construction Corp., Norfolk are joint contractors.

2. Both firms, working on separate sections, are using Moretrench Wellpoint Equipment for quick dry results and economical progress.

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Expert planning, superior equipment, years of know-how stand in back of every Moretrench job. That's why experienced contractors depend on it, again and again, for excavating "in the dry".

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PLASTIC PIPE—Illustrated catalog lists information on characteristics of Johnsonite plastic pipe. Features and recommended installations for this type of pipe are listed, and principal advantages are described in detail. **—Johnson Plastic Corp., Brown Road, Chagrin Falls, Ohio.**

COLOR-NAME DICTIONARY — Sixty-four-page supplement to a color-harmony manual is a color name dictionary. Dictionary contains 775 names arranged so that the user can work from names to colors, or conversely. To match any color, select color chips from the manual and then find the names in the dictionary which correspond to the notations on the chips. — **Container Corp. of America, 38 S. Dearborn St., Chicago 3, Ill.**

STEEL SCAFFOLDING — Bulletin describes line of steel scaffolding and allied equipment for building contractors. Special emphasis is placed on the Adjustomatic locking device that eliminates all loose parts such as bolts, nuts, and coupling pins. The folder is 12 pp. in length.—**Automatic Devices, Inc., 1260 Hodiamont Ave., St. Louis 12, Mo.**

TRANSMISSION BELTING—Technical bulletin contains data on flat transmission belting. It is designed as an aid to plant engineers and operating personnel in selecting the proper belt to meet individual problems. Bulletin 3678 contains complete formulas, charts and tables.—**Thermoid Co., Trenton, N. J.**

EXPANSION JOINTS — Four-page leaflet describes four types of expansion joints—single end, double end, single end with limited movement, and double end with limited movement. Sizes listed range from 3 in. ID, to 24 in. OD—**Dresser Industries, Inc., Dresser Mfg. Div., Bradford, Pa.**

WOOD PRESERVATIVE—Descriptive booklet (12 pp) traces history and development of Chemonite copper-arsenic preservative, lists facts and figures to show its efficiency, and indicates the correct uses of Chemonite-treated wood. — **J. H. Baxter & Co., 200 Bush St., San Francisco 4, Calif.**

ALL-PURPOSE EXCAVATOR—Bulletin 400 describes the Marion Type 43-M all-purpose 1-yd excavator. The bulletin lists and illustrates varied applications of the 43-M as a shovel, dragline, clamshell, crane, backhoe, and pile driver. Features listed include: Ease of front-end conversion, air control, independent boom hoist as standard equipment, only two horizontal shafts on the machinery deck, and 22 important friction points are equipped with ball or roller bearings. **—Marion Power Shovel Co., Marion, Ohio.**

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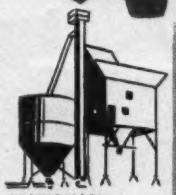
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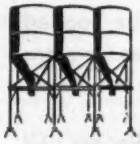
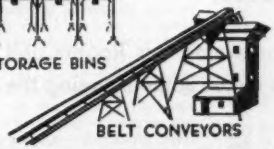

STORAGE BINS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● Heltzel-engineered equipment provides that element of efficiency so important when man hours count highly. Each product in the Heltzel line is backed by 40 years experience in the concrete industry. Contractors and concrete producers know that Heltzel builds quality, high performance equipment. It stands the test of time and rugged operating conditions. Some of the Heltzel line of products are pictured here.

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Literature describing remarkable features of the new ROGERS Power-Lift Detachable Gooseneck Trailer will be sent upon your request; but—more than that—any Rogers Dealer will demonstrate its features, right on your own desk with an *operating scale model.*

Contact him—see how easily it detaches—how the deck can be raised or lowered to avoid unloading and detouring under certain conditions—how disabled, non-powered equipment can be loaded easily—how the design provides giant tires for extra heavy and profitable payloads.

To buy a trailer without seeing this Rogers unit would be like going to the circus without seeing the elephant. Don't do it.

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DRILLING EQUIPMENT—Diamond and shot core drills, soil-sampling tools, and other equipment for subsurface exploration are listed in 4-p Bulletin 33. Various models are illustrated, accompanied by brief descriptions of their principal features. Capacities and recommended applications are also listed.—**Acker Drill Co., Inc., Scranton 3, Pa.**

SILVER ALLOY BRAZING — Where and how to use Easy-Flo and Sil-Fos low-temperature silver-alloy brazing methods are described in Bulletin 20. This bulletin shows interesting applications and describes fast brazing techniques.—**Handy & Harman, 82 Fulton St., New York 7, N. Y.**

STEEL SHEETING—How to use lightweight corrugated steel sheeting to control movement of soil or water is described in this illustrated 10-p booklet. The bulletin (SH-4650) points out where Armco interlocking and flange-type sheeting can be used to advantage, and contains photographic case-histories to show that the sheeting has ample strength, is fast driving, and results in lower costs. Emphasized, is the fact that steel sheeting can be pulled and reused many times. Also included is data on driving, properties, and how to figure sizes and spacing of wales and struts.—**Armco Drainage & Metal Products, Inc., General Offices, Middletown, Ohio.**

FIRE EXTINGUISHERS—Technical bulletin (No. 9) explains the effect of dry chemicals in putting out fires in electric motors and generators. It also explains how the residual deposit of dry chemical is removed after the flames are extinguished, permitting subsequent use of the equipment.—**Ansul Chemical Co., Marinette, Wis.**

ROOF REPAIRS, MAINTENANCE —Folder entitled "Roof Savers" tells how to prolong the life of a roof and how to repair accidental damage. Pictures illustrate roofs in various stages of deterioration, and text explains proper treatment to follow in each case. Folder includes a discussion of why roofs wear out; an illustrated explanation of the principal ingredients used in roof savers and what each contributes; suggestions on application; and data on container sizes, weights and coverage. — **Johns-Manville, 22 E. 40th St., New York 16, N. Y.**

ORANGE-PEEL BUCKETS—Line of buckets in 1½- and 1¾-ft sizes are described on this data sheet. The sheet contains complete information on these buckets which have 15- and 18-in. dia. Construction details and features are described, and specifications are listed for over-all height, over-all width, and weight.—**N. P. Nelson Iron Works, Inc., 820 Bloomfield Ave., Clifton, N. J.**

FRAME CONSTRUCTION — Two new charts illustrate graphically the principles of proper frame construction. The charts measure 3x4 ft, and when placed side by side, require a 4x6-ft wall space. Charts feature a description of eleven major construction details, explained in an easily understood manner.—**Southern Pine Assn., New Orleans, La.**

DIESEL ENGINES—Series 71 2-cycle diesel engines are described in this 36-p catalog. It covers single and multiple engine units from 2 to 24 cylinders, ranging from 32 continuous to 780 intermittent horsepower. It contains data on GM design and interchangeability of parts; a "Select-Your-Power" chart covering 57 standard power take-off and 7 torque-converter models; engine illustrations; and an outline of Detroit Diesel service facilities.—**Detroit Diesel Engine Div., General Motors Corp., 13402 W. Outer Drive, Detroit 28, Mich.**

WALL-FORM CONSTRUCTION — Enlarged, completely illustrated catalog describes Uni-Forms and the Uni-Form system of wall-form construction. The catalog illustrates several applications showing these forms in use on every type of concrete-forming work. — **Universal Form Clamp Co., 1428 N. Kostner Ave., Chicago 51, Ill.**

NO TIME LOST!
LOADING OR LAYING ITS LOAD

A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

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COMMENT
from the
BUTLER ENGINEER

April, 1951

Of Several Things— Including *FIRE*

What's a fireproof building? Here's the best definition I've heard: "One that burns with a bright blue flame." . . . How fireproof is any Ready Mixed Concrete Plant? Or Roadbuilder's Plant? The answer's in the form of another question. What materials or equipment in the plant could cause a flash fire? A gas engine perhaps. Gasoline or oil in storage. Wood platforms. Wood siding . . . Think it over, because when you have a sudden 4-11 roarer concentrated against loaded structural steel—brother, get fire insurance—beforehand! I've seen it happen.

•

Butler Bin families are prolific. Wait a minute. What I mean is that people who install Butler Plants order more—strictly Butler—when their operations expand. Quintuplets aren't unusual. Triplets are common. Septuplets quite often occur. Names of the happy families on request. No room to print 'em. Two things, however, are pretty evident. The profitable efficiency of Butler Engineered Design *leads to expansion. And there's no net worth-control for one who joins the Butler Bin family.*

•

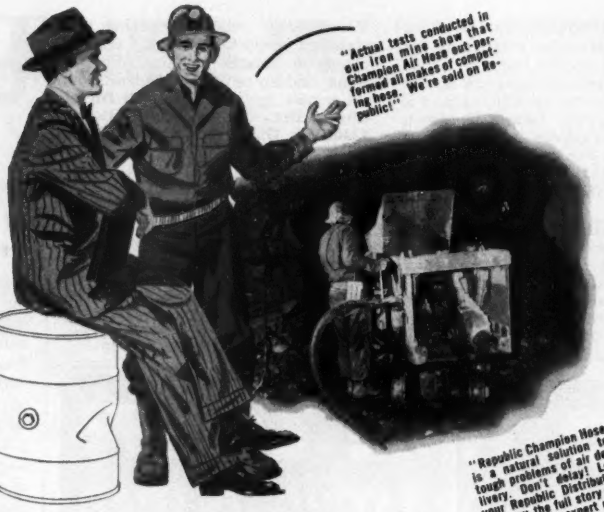
I attended the Ready Mixed Convention at New Orleans. Ready mixed concrete, I'm speaking of — not the already-mixed Floras and fauns around the bars . . . A woman's ready-to-wear shop next to the Roosevelt displayed bras and panties. That's not unusual, but worked prominently into the fabric was the silhouette of a hand. Masculine, if I'm any judge. Come to think of it, how unusual is that? I really wouldn't know. I'm a structural engineer—but I confine myself to steel.

•

I'll be back 'long about June.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN


"Actual tests conducted in our iron mine show that Champion Air Hose out-performed all makes of competing hose. We're sold on Republic!"

An oil-resistant Neoprene tube, a rubber-insulated, premium high-tensile braided carcass and a resilient yellow safety cover make Champion Air Hose the toughest product of its class anywhere in the world.

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Equip with Republic's Champion All-Service Air Hose and you're set for a good long period of trouble-free operation. *And that goes for any job no matter how tough!* Republic's Champion Air Hose is colored yellow for safer visibility. It's specially fabricated for added strength and flexibility without any increase in over-all hose weight. Champion Hose is another great achievement produced by Republic, *specialists in industrial rubber products for a half century.* Contact your local Republic Distributor or write direct for full facts.

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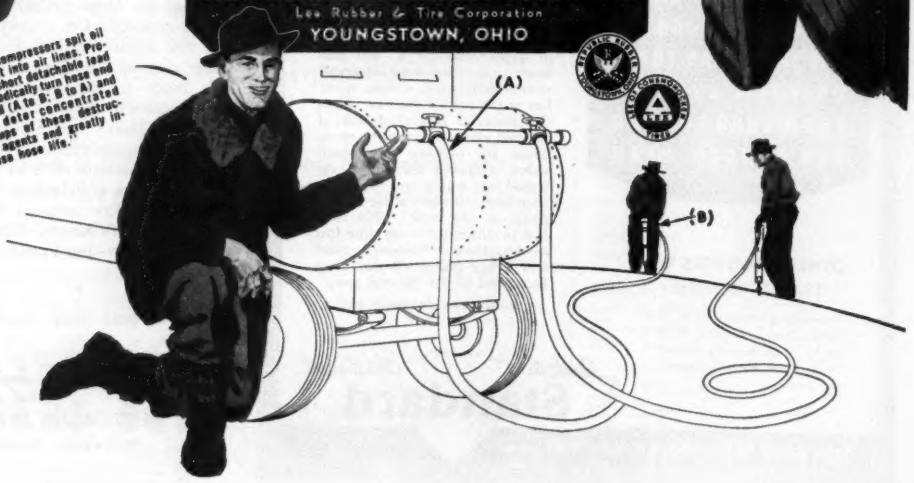
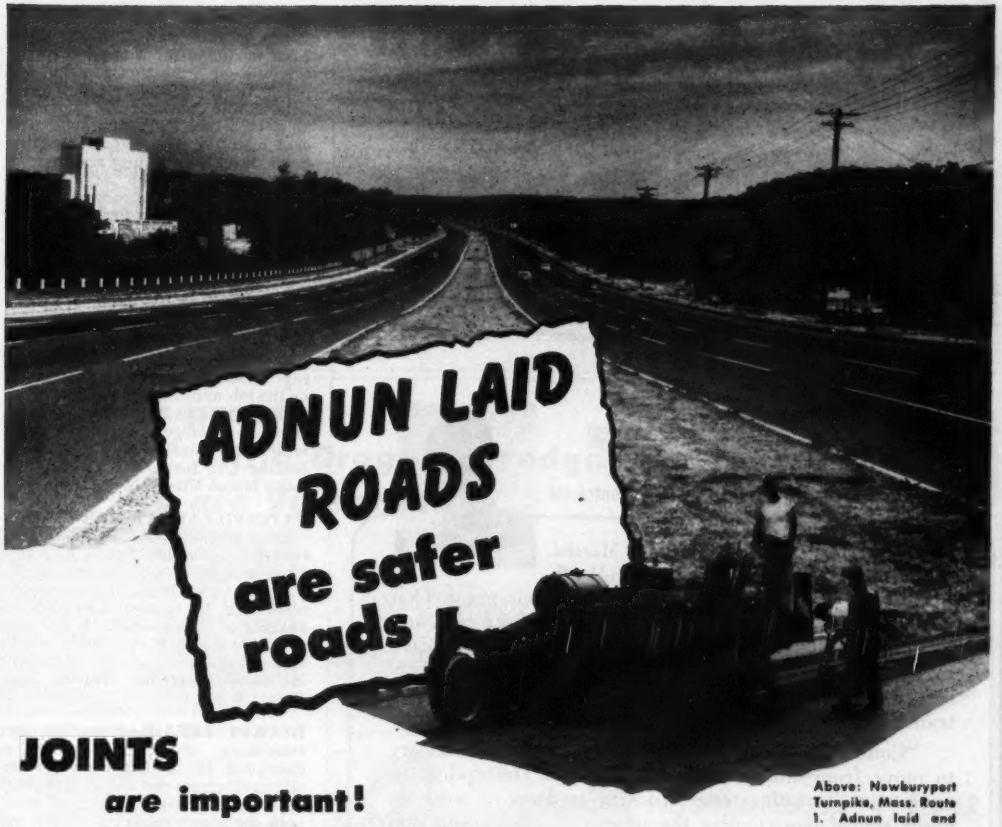
"Most compressors spit oil and heat into air lines. Provide a short detachable lead or periodically turn hose end for end (A to B; B to A) and you'll deter concentrated buildups of these destructive agents and greatly increase hose life."





JOINTS
are important!

IN this day of the increased use of asphalt on high-speed, multi-lane roads, tight, smooth joints mean safer roads.

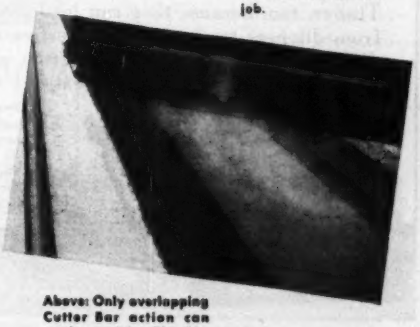
The Adnun is the only black top paver that makes a tight joint automatically. The oscillating overlapping Cutter Bar carries the material up against the parallel course or curb and compacts it in place. It is not dependent on the eye or human judgment. It is level, tight and positive—a safe joint that will not throw a car off its course or leave thinner spots where breakdown can begin.

This is only one of the many Adnun advantages that has been responsible for the long life of heavily traveled Adnun laid roads. If you don't have them ask for the booklets "Roads That Last" or "11 Basic Things . . ." They tell an interesting story.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1910 State Street Nunda, New York

Above: Newburyport Turnpike, Mass. Route 1. Adnun laid and traffic loaded since 1936, 15 years ago.

Lower: Joints are going to be tight and safe on this three lane job.

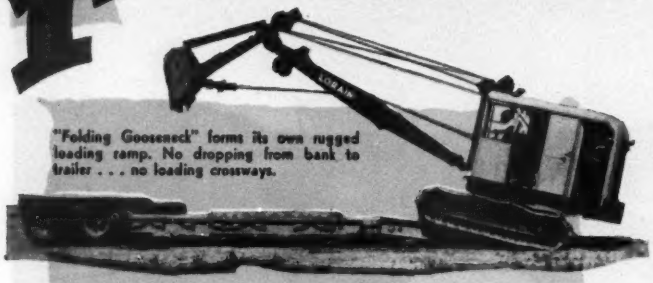


Above: Only overlapping Cutter Bar action can produce a joint like this. No raking or hand work is necessary.

ADNUN
TRADE MARK REGISTERED

BLACK TOP PAVER

1ST MARTIN FOLDING GOOSENECK TRAILER



"Folding Gooseneck" forms its own rugged loading ramp. No dropping from bank to trailer . . . no loading crossways.

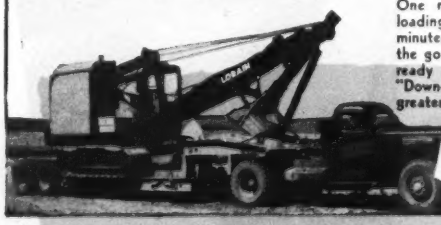
IS STILL NO. 1

with Frank Poetter, Lewistown, Montana, Contractor

● Frank Poetter bought the first Martin "Folding Gooseneck" Trailer to roll off the assembly line at Martin's Kewanee, Illinois, plant. That was several years ago. Right off, it was No. 1 with him, and it still is! Listen to what he says: "My Martin 'Folding Gooseneck' is the trailer I had looked for ever since my first day handling heavy equipment. There is no other trailer that I have used that compares with it!

"Contracting small utility jobs, as we do, it is necessary to move from one to three times a day. The savings in equipment operating time *(we save an hour or more on every shovel move)*, plus the savings in man power and the elimination of hazards, make our Martin Trailer our best equipment investment.

"Our operators like the Martin 'Folding Gooseneck' Trailer, too, because they can load any of our equipment from ditchers to shovels with perfect safety, though conditions are usually a long way from ideal. And one man handles the entire loading operation!"



One man handles the entire loading operation in about 5 minutes. Truck power takes up the gooseneck and the outfit is ready to roll to another job. "Down-to-earth" platform gives greater clearance and stability.

Your Martin Dealer is your "CATERPILLAR" Dealer

MARTIN Trailer

KEWANEE ILLINOIS

CORRUGATED METAL PIPE—Types of fullround pipe and Pipe-Arch available for sewers, culverts, conduits, or irrigation systems are listed in this 16-pager. Reference data aids in selecting the most suitable structures. Photographs and case histories show typical installations. Details on fittings and instructions on installation of drainage structures are also included.—**Armco Drainage & Metal Products, Inc., General Offices, Middletown, Ohio.**

TUBULAR-STEEL SCAFFOLDING—Photographs and line drawings in Bulletin PSS-24 are designed to present detailed information on erection and dismantling of Trouble Saver sectional tubular steel scaffolding. These pictures illustrate many on-the-job applications ranging from rolling scaffolds and other small assemblies to large erections covering entire buildings.—**The Patent Scaffolding Co., Inc., 38-21 Twelfth St., Long Island City 1, N. Y.**

CATERPILLAR PRODUCTS—Forty-page booklet, published annually, contains a complete listing with pictures and brief specifications of the current Caterpillar line of equipment. Of the eleven new models announced during 1950, all but two are included in Form 30081. Application photos show the equipment in use.—**Caterpillar Tractor Co., Peoria 8, Ill.**

BUCKET REPAIR—Repairing and rebuilding of worn buckets is described in an illustrated folder which discusses the use of Manganal 11 to 13½% manganese-steel products for every type of bucket repair. Complete details are presented on the chemical characteristics and physical properties of the Manganal alloys.—**Stulz-Sickles Co., 134 Lafayette St., Newark 5, N. J.**

CHAIN DRIVES—Handbook contains information on how to install, maintain, and operate roller chain. It tells how to plan chain-drive layouts, and offers hints on lubrication and roller-chain selection. Technical data cover conversion tables, horsepower rating charts, list prices, and specifications for all types of roller chain and extended-pitch conveyor chain.—**Atlas Chain & Mfg. Co., Philadelphia 24, Pa.**

WELDING BUYERS GUIDE—Booklet covering alloys and fluxes for welding, brazing, soldering, cutting, and tinning contains information of help to buyers without previous experience or highly technical training. Data is organized and cross-referenced to make correct selection practically automatic. Information is listed according to the base metal, welding processes to be used, and working temperatures and strengths involved.—**All-State Welding Alloys Co., Inc., 273 Ferris Ave., White Plains, N. Y.**

PRESSURE-REDUCING VALVE — Technical information on a cushioned water-pressure reducing valve is contained in 6-P Bulletin W-3. Bulletin features the general arrangement of the valve and a detailed list of parts. Installation, operation, adjustment, servicing, and specifications are fully described. A table lists general dimensions and weights. **—Golden-Anderson Valve Specialty Co., 2094a Keenan Bldg., Pittsburgh 22, Pa.**

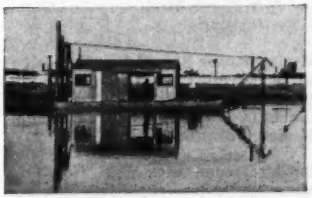
WATER METERS — Auto-Stop meters for automatically controlling amount of water delivered to ready-mix concrete batches are described in Bulletin 562. These meters are operated by buttons set to the number of gallons required. Bulletin contains complete specifications and prices for 1-, 1½-, and 2-in. meters for cold, warm, or hot water.—**Neptune Meter Co., 50 W. 50th St., New York 20, N. Y.**

MOISTURE METER—Bulletin 1295 (6 pp) describes the Tag midget moisture meter designed for instantly determining the moisture content of wood, lumber, plaster, and wood products. The booklet describes the principles of operation of the meter, and explains in detail how it is used. **—Tagliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.**

Here's proof
ELLICOTT Little Dragon® Dredges *are Versatile!*

Maintain and improve irrigation canals.

Convert marshes into valuable real estate.



Remove sludge from settling basins.

Clean silt from water supply systems.

LITTLE DRAGON hydraulic dredges are designed for a variety of jobs. As the four location pictures above show, they're ideal for constructing or improving canals, lakes, harbors and rivers . . . are equally efficient for providing fill for swamps, beaches and dams. These low-cost, standard Ellicott Little Dragons can deliver up to 150 yards of solids an hour, pump to 2000 feet and dredge to 20-foot depth.

And moving from job to job is no problem. Special sectional design makes Little Dragons easy to disassemble, load and move by truck, rail or water.

At each new job site, sections are easily floated, bolted together and set up for operation. For full details on the versatile, low-cost Little Dragon, write today for Bulletin 804. ELLICOTT MACHINE CORP., 1605 Bush Street, Baltimore 30, Maryland.

ELLICOTT Builds Any Type, Any Size, Any Service

No matter what your dredging problem, Ellicott builds the type and size dredge to handle it efficiently. Only Ellicott offers 66 years' experience in dredge building; a complete line; undivided responsibility—your dredge designed, built and delivered under one contract.

ELLICOTT HYDRAULIC DREDGES

SAVE HOURS ON CONDUIT AND PIPE INSTALLATIONS

...with a GREENLEE PIPE BENDER

Cut costs, speed your jobs this efficient, easy, economical way. Make "on the job" bends in pipe and rigid conduit up to 4½", thin-wall conduit and tubing with a GREENLEE Hydraulic Bender. One man operated for fast, accurate, uniform bending. Simple to operate, easy to set up and shift from job to job. Not only saves labor, but eliminates cost of many manufactured bends and fittings. Often pays for itself on first few jobs. Write today for free folder No. E-201.

GREENLEE

Other GREENLEE timesaving tools for industry: Hand Benders for Tubing • Hydraulic Pipe Pushers Knockout Tools • Auger Bits and Drills • Spiral Screw Drivers • Chisels and Gouges • And many others. Greenlee Tool Co., 2184 Columbia Ave., Rockford, Ill.

10 YEARS DEVELOPMENT

ON FIELD TESTS IN EVERY TYPE OF PROSPECTING AND STRIPPING THROUGHOUT THE WORLD.

Also available in the popular STANDARD ONE-SPEED DRILL

The Parmanco Two-Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with six inch equipment and can be used to greater depths with four and one-quarter inch equipment.

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

SALES AND PARTS SERVICE

A department devoted to manufacturers' activities involving the sale and distributon of products and parts, and service facilities. Designed to give the reader information that will enable him more readily to purchase products and parts and to service his equipment.

Distributor Appointments

Euclid Road Machinery Co.: N. A. Burkitt, Inc., Scarbora (Portland suburb), Me., is distributor for the entire state. Dietrich-Collins Equipment Ltd., Vancouver will handle the Canadian provinces of British Columbia and Yukon. A parts and service branch is located at Nanaimo, B. C.

Rosco Mfg. Co.: Sheppard Equipment Co., Inc., Lexington, Ky., is exclusive distributor for the state of Kentucky.

Reed Roller Bit Co.: Cleco Division announces four appointments. Gil Boers Equipment Co., Chicago; Airline Equipment Co., Philadelphia; Olson Equipment Co., Minneapolis; and Equipment Sales Co., Phoenix.

W. A. Riddell Corp.: Appointments announced include Baldwin Machinery Co., Inc., Charleston, W. Va.; Gill Equipment Co., Atlanta, Ga.; and A. T. Green Machinery Co., Glenshaw, Pittsburgh, Pa.

Marion Power Shovel Co.: Exclusive Mexican rights are awarded to Ingenieria Mecanica y Electrica S. A. Offices of this company are at Roma 35, Esq. Viena, Mexico City.

Barber-Greene, Inc.: W. S. Nott Co., Minneapolis has exclusive distribution rights for B-G permanent conveyor equipment in Minnesota, North Dakota, and western Wisconsin. The franchise is shared with Empire Equipment Co. in South Dakota.

New Sales Outlets

(Agencies, Branches)

City Industrial Engine Sales, Inc.: Complete sales, parts, and service facilities for Chrysler and International engines are available at 2259 S. Indiana Ave., Chicago, Ill.

Mutual Truck Parts Co., Inc.: New Milwaukee service branch is located at 2460 W. Clybourn St.

Arcos Corp.: West coast office and warehouse are opened at 427 South Western Ave., Los Angeles, Calif. B. E. David is district manager.

Allis-Chalmers Mfg. Co.: New branch office in Peoria, Ill., is headed by

(Continued on page 165)

STOCK ON HAND . . . SEE YOUR DEALER
or WRITE US

"WELD-ON" POCKETS

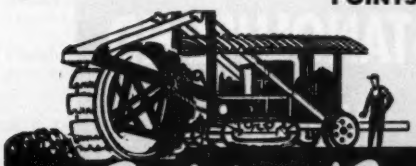
For All Types OF TRENCHING MACHINES

★ **STRENGTHENS THE BUCKET . . . USES NO BOLTS**
This change-over standardizes your stock order to just one type of points for all equipment.

COMPLETE SERVICE ON ALL TRENCHER BUCKETS, ADAPTERS and POINTS.

THE CHEAPEST AND BEST CHANGE-OVER ON THE MARKET.

★ **EQUIP your buckets with 'QUICK CHANGE' SELF-SHARPENING REVERSIBLE POINTS and WELD-ON POCKETS**

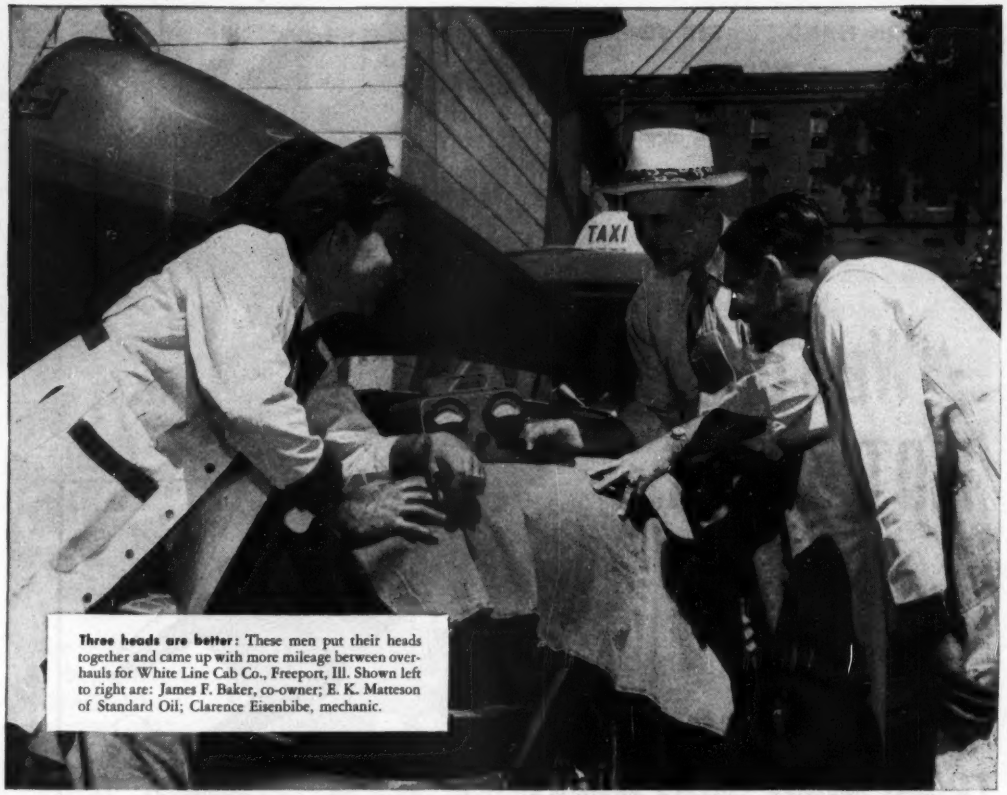


"WO-1" pocket fits all trenchers except Barber-Greene. For Barber-Greene order "WO-2".

Jiffy Products Company

Phone Dixon 2623
8402 HINES BLVD.

. . . Dallas, Texas



Three heads are better: These men put their heads together and came up with more mileage between overhauls for White Line Cab Co., Freeport, Ill. Shown left to right are: James F. Baker, co-owner; E. K. Matteson of Standard Oil; Clarence Eisenbibe, mechanic.

How they boosted mileage between overhauls

● It's rough work . . . the constant stop-and-start city driving that cabs experience as a matter of routine. But, despite these severe operating conditions, the fleet of cabs operated by the White Line Cab Company of Freeport, Illinois, has more than doubled its mileage between overhauls.

At one time, cold engine sludge was a big problem. It resulted in excessive engine wear and made necessary frequent engine overhauls. When a Standard Oil automotive engineer was consulted, he recommended switching to STANOLUBE HD, a heavy-duty motor oil especially fortified to combat deposits and sludge formation.

The results are reported by James F. Baker, co-owner of the White Line Cab Company:

"We have used STANOLUBE HD over a period of years and find it does an excellent job of reducing cold engine sludge. Our engines are much cleaner, and periods between overhauls have been extended considerably due to more efficient engine operation. We highly recommend STANOLUBE HD to other fleet operators with intermittent type of operations for reduction of low temperature engine sludge and reduction of maintenance costs."

Whatever operating conditions face your fleet – high temperatures, heavy loads, or low temperature, intermittent operation–you'll find STANOLUBE HD fortified to meet them. A trial will convince you. Take advantage, too, of Standard's automotive engineering service and its widespread supply points.

To put STANOLUBE HD to work in your fleet, phone your local Standard Oil office, or write:

Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANOLUBE HD
REG. U.S. PAT. OFF.
Motor Oil

STANDARD OIL COMPANY (INDIANA) STANDARD

(Continued from page 162)

Stanley E. Bovim. F. D. McGuire, Jr., sales representative, is transferred to Peoria from the Chicago district office.

Fairbanks, Morse & Co.: Robert W. Perry is manager of the branch at Philadelphia, covering eastern Pennsylvania, southern New Jersey, Delaware, and the eastern shore of Maryland.

Patent Scaffolding Co.: New England headquarters has opened a branch office and warehouse at 67½ Madison St., Hartford, Conn. E. F. Fredricks is manager.

Production

Link-Belt Co.: Tom Cornils is chief engineer for the Pacific Northwestern division with headquarters at the Seattle plant.

Allis-Chalmers Mfg. Co.: Arthur W. Van Hercke is named vice-president in charge of Tractor Division engineering.

Nordberg Mfg. Co.: P. S. Shirley is named chief development engineer of the heavy machinery division.

Sales Personnel

Aluminum Co. of America: Lewis P. Favorite is head of the New York district sales office.

Marion Power Shovel Co.: Kenneth A. Hanan is sales representative in the New York City district office; John C. Priest in the Chicago district office.

R. G. LeTourneau, Inc.: James W. O'Connor and J. W. (Bill) Gulledge are added to the company's field engineering staff.

Zonolite Co.: John P. Williams is named western New York representative.

Worthington Pump & Machinery Corp.: A. William Fraser is appointed Midwest sales manager; J. J. Llanso, general export manager.

Richkraft Co.: Herman L. Smith is general sales manager.

Shunk Mfg. Co.: J. D. Newkirk is assistant sales manager in charge of all customer relations.

B. F. Goodrich Co.: A. Clarke Mack, Jr., is manager of flat-belting sales, succeeding J. Robert Thompson, named as manager of the Atlanta district of the Industrial Products sales division.

A. M. Byers Co.: Buckley M. Byers is assistant manager of steel sales; Victor C. Lawrence succeeds him as manager of export sales.

WELLMAN *Williams Type*

MORE YARDAGE PER DAY

● Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

Want Facts?

Write for free descriptive bulletins.

THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue • Cleveland 4, Ohio

DRAGLINE, CLAMSHELL, CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

... the new separable

FLEXCO HINGED

BELT FASTENERS

U. S. Patent No. 2,477,355

- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts ⅜" to ½" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

McKIERNAN-TERRY

RUGGEDLY-BUILT

PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 10 double-acting hammers and 5 single-acting hammers. Write for free Bulletin.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION

MANUFACTURING ENGINEERS

14 PARK ROW, NEW YORK 38, N. Y.

REDUCE CONCRETE LABOR COSTS UP TO 60%

with the

WORLD'S FOREMOST "SHAKE-DOWN ARTIST"

The one-man Vibro-Plus Roll-gear Internal Vibrator will help you roll back rising labor costs and do a better job.

Available in electric, gas-engine or pneumatic-driven models delivering from 11,000 to 15,000 V.P.M. Exclusive patented features assure years of trouble-free operation.

Write for complete details and name of nearest distributor.

VIBRO-PLUS PRODUCTS, INC.

54-11 Queens Blvd., Woodside, L. I.

Armstrong Cork Co.: M. P. LaChapelle is named district manager of the Denver office of the Building Materials Division.

Athey Products Corp.: Worthington J. Gross is manager, governmental division; and Bert C. Landstrom is district representative for the seven eastern states and the northeastern part of Canada.

Freuhauf Trailer Co.: Eight district sales managers are named: Glen W. Buse, St. Paul, Minn.; A. V. Howe, South Kearny, N. J.; M. M. Williamson, Oklahoma City, Okla.; C. L. Sargent, Boston, Mass.; M. J. MacQuarrie, Buffalo, N. Y.; F. L. Brower, Birmingham, Ala.; V. H. Rossman, Philadelphia, Pa.; and H. R. Shapaugh, Dallas, Tex.

George Haiss Mfg. Co., Inc.: Phil Levin is sales manager, bucket division of this division of Pettibone Mulliken Corp.

L. B. Smith, Inc.: W. G. Everhart is named Philadelphia branch manager.

Alloy Rods Co.: E. R. Walsh, III, is general sales manager.

U. S. Steel Corp.: David A. Challis, Jr., is assistant general manager of sales; Clyde B. Colwell, Jr., is assistant district manager for the Twin Cities district.

New Maintenance Tool

UNI-CHANNEL

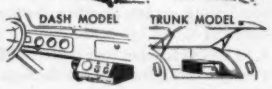
SENSICON DISPATCHER

the *best* in low-cost

2-WAY RADIO

6 OR 12 VOLT DC VERSION AS EMERGENCY BASE STATION

117 VOLT AC VERSION AS A BASE STATION



Take it along—Anywhere, it's built to take it. Eliminates outage, mileage, maintenance costs.

Long, trouble-free operation and protection against obsolescence.

No less than EIGHT exclusive MOTOROLA developments make it your first choice in low-cost 2-way mobile radio!

FM 2-WAY RADIO

Motorola

SPECIALISTS IN MOBILE RADIO FOR 20 YEARS

4545 AUGUSTA BLVD., CHICAGO • ROGERS MAJESTIC ELECTRONICS, LTD., TORONTO, CANADA

Metalweld, Inc.: Nicholas N. Economou has joined the company as sales engineer.

Masonite Corp.: F. O. Marion is appointed sales manager.

Nordberg Mfg. Co.: Thomas B. McMeekin is sales and service engineer, heavy machinery division, of the San Francisco office.

Miller Electric Mfg. Co.: R. A. "Dick" Metcalf is assistant sales manager. W. H. "Sief" Siefferman succeeds him as district manager for Wisconsin, Minnesota, North and South Dakota. F. H. "Fred" Beck takes over the Michigan territory, and J. E. "Jim" Vosburgh is western district manager in charge of Colorado, Wyoming, Montana, Utah, Nevada, New Mexico, Arizona, California, Oregon, Washington, and Idaho.

Hyatt Bearings Div.: Frank U. Naughton, Jr., is manager of the eastern sales division.

Link-Belt Co.: Harry G. Andersen is district manager at Birmingham, Ala.

Westinghouse Electric Corp.: E. C. Delano is manager of the New England district with headquarters in Boston. He succeeds L. E. Lynde, newly elected vice-president.

Independent Pneumatic Tool Co.: John B. Dempsey is manager of the Detroit branch succeeding Robert G. Faverty, named manager director of Armstrong-Whitworth & Co., Thor subsidiary in England. Edward W. Krantz succeeds Mr. Dempsey as manager of the Pittsburgh branch. William J. McGraw is manager of the New York branch. Clarence B. Bergren is Cleveland branch manager.

Nordberg Mfg. Co.: Robert P. (Pat) McBride is sales engineer, heavy machinery division.

American Hoist & Derrick Co.: John E. Carroll is elected vice-president of sales.

Ownership Changes

Pettibone-Mulliken Corp.: Has purchased the Rome Grader Division of Union Fork & Hoe Co., Rome, N. Y.

Essick Mfg. Co.: Has acquired all stock of the Sterling Machinery Corp., Kansas City, Mo.

Aeroquip Corp.: Has purchased all the outstanding stock of Metalco, Inc., Jackson, Mich.

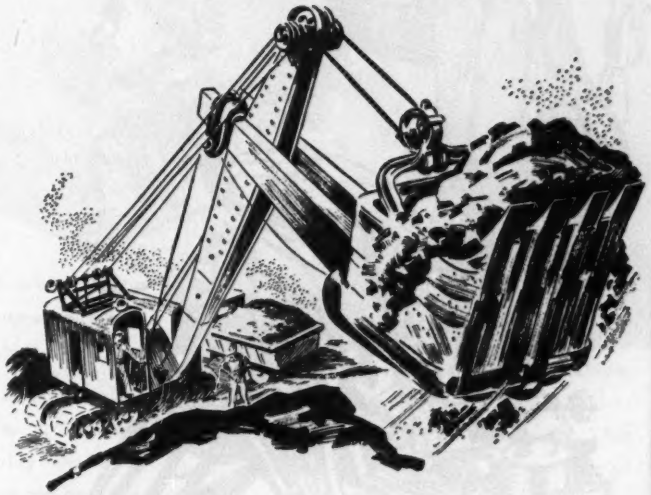
Miscellany

Fruehauf Trailer Co.: Nine new service managers are named—Joseph Klinzing, Pittsburgh, Pa.; August M. Figi, Detroit, Mich.; W. C. Doyle,

(Continued on page 171)

TOPS IN QUALITY!

J-M INDUSTRIAL FRICTION MATERIALS more than meet the high-quality standards specified by the leading manufacturers of heavy-duty earth-moving equipment.



TOPS IN PERFORMANCE!

Operators who put their machines out on the job must rely on equipment that can take it—that's why they rely on J-M INDUSTRIAL FRICTION MATERIALS to keep equipment operating on the job.

Manufacturers . . . operators—if your business has to do with shovels, cranes, hoists, or similar industrial equipment, you owe it to yourself and your organization, to *know* all about J-M Friction Materials. Here are rugged clutch and brake materials that are designed to move and stop bigger loads at higher speeds . . . to give you more hours of higher performance at lower cost. Write today for your copy of "Johns-Manville Industrial Friction Materials," that will give you the details—Johns-Manville, Box 290, New York 16, N. Y.

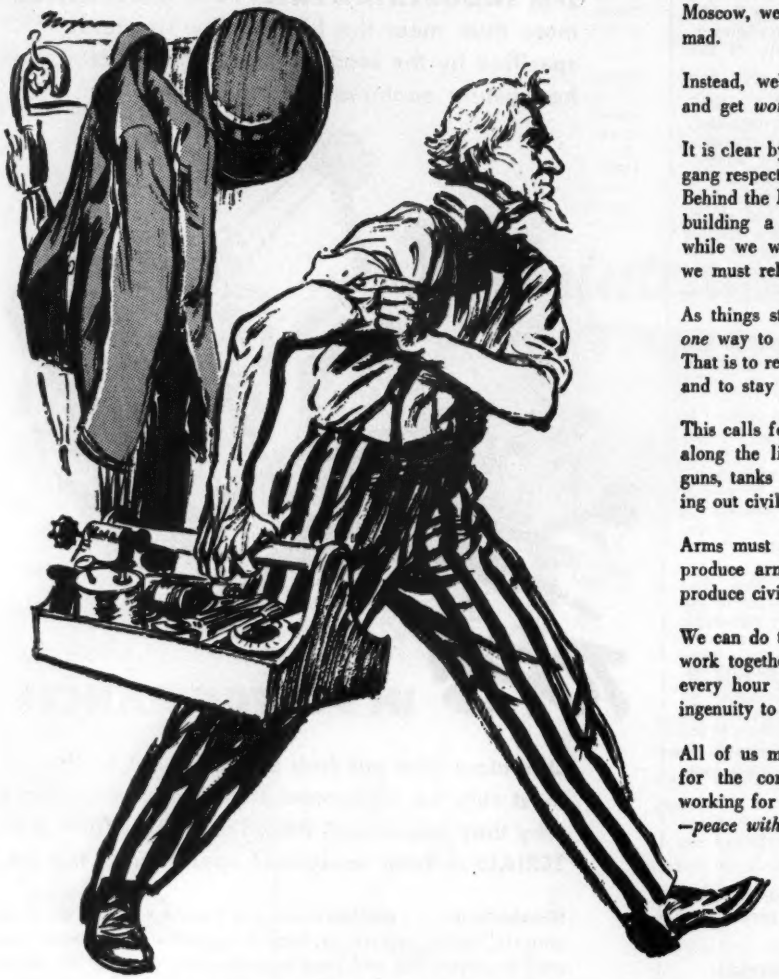
JM

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

It's time we got *working* mad!



As we listen to the latest insults from Moscow, we're likely to get fighting mad.

Instead, we'd better use our heads and get *working* mad.

It is clear by now that Stalin and his gang respect just one thing—strength. Behind the Iron Curtain they've been building a huge fighting machine while we were reducing ours. Now we must rebuild our defenses—*fast.*

As things stand today, there is just *one* way to prevent World War III. That is to re-arm—to become strong—and to stay that way!

This calls for better productivity all along the line. Not just in making guns, tanks and planes, but in turning out civilian goods, too.

Arms must come first. But we must produce arms *at the same time* we produce civilian goods.

We can do this double job if we all work together to turn out more for every hour we work—if we use our ingenuity to step up productivity.

All of us must now make sacrifices for the common good. But we're working for the biggest reward of all —*peace with freedom!*

THE BETTER WE PRODUCE THE STRONGER WE GROW

FOR A FREE COPY OF "THE MIRACLE OF AMERICA"

MAIL THE COUPON to Public Policy Committee, The Advertising Council, Inc., Dept. B.P., 25 West 45th Street New York 19, N. Y.

Name.....

Address.....

McGRAW-HILL PUBLISHING COMPANY

LESS 'SHUT-DOWN TIME' DUE TO ADVERSE WEATHER WITH THE SEAMAN MIXER

When a sudden rain sends your road crew to shelter — you can start up your mixing operations again hours sooner if you have a SEAMAN.

Why? Because the SEAMAN'S aerating action quickly removes excess moisture by accelerating evaporation. Wet aggregates are readily dehydrated and a mix affected by adverse weather can be easily re-processed.

Mixing can be continued through colder weather, too, for even though the binder is sluggish in flow, a few additional low cost passes with the SEAMAN will bring the mix to the required standard. And, even in normal processing the SEAMAN is invaluable for reduction of solvents in a bituminous mix.

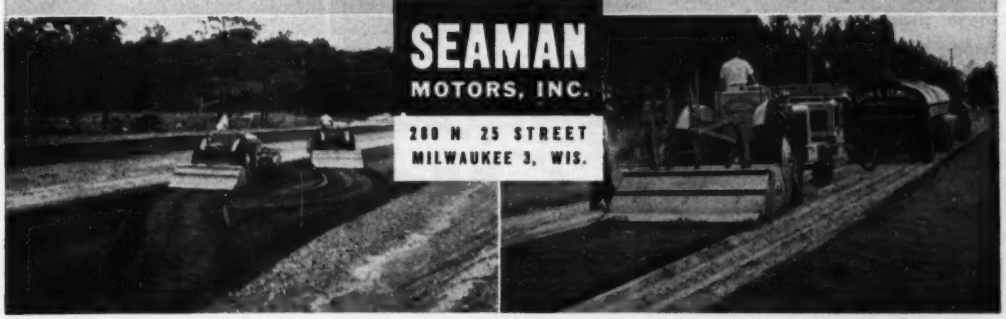
Those are just some of the advantages of a multiple pass machine. You *can* operate — you *can* complete the job even when conditions are unfavorable. That means a lot in terms of profit and the avoidance of costly shut-downs.

Spring and autumn months are notorious for bad weather. Protect yourself — with a SEAMAN.

The 1951 edition of "Soil Stabilization Methods"— completely revised. Up-to-the-minute information for the road-builder. Send for it now. Ask for Bulletin 25.

The SEAMAN multiple pass method protects against processing failure when, due to bad weather or soils which resist pulverization, additional trips are needed. Further, multiple passes permit cross-mixing to blend out "lean" and "fat" spots.

The SEAMAN TRAV-L-PLANT is a complete processing unit for bituminous construction, soil-cement or any stabilization where water is employed. In addition to spray bar, pump, pump tachometer, fifth wheel and intake hose, all standard equipment—the SEAMAN TRAV-L-PLANT can be equipped with a meter to record total gallonage used.



SEAMAN
MOTORS, INC.
280 N 25 STREET
MILWAUKEE 3, WIS.

It takes a man less time to do more work with

HOMELITE

HIGH CYCLE

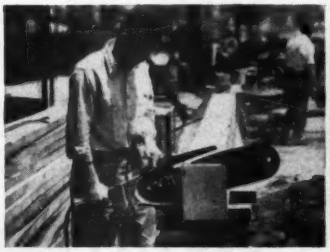
POWER

Look into this, *seriously.* Contractors . . . more and more . . . are using high cycle power tools to speed work and cut man hours. And Homelite is making this possible with its lightweight, carryable, gasoline engine driven generator . . . a Homelite Dual Purpose Generator that supplies high cycle power as well as standard 110 volt current.

With this type of generator . . . the only one of its kind . . . you can mix the old with the new. You can use it to operate your old standard universal tools or floodlights. And, at the same time, you can use it to operate the newer, lighter weight, more productive and easier-to-handle high cycle tools.

Write today for a free on-the-job demonstration.

With a Homelite Dual Purpose Generator you can operate the newest type concrete vibrators . . . the high cycle vibrators that enable one man to do the work of three.



With a Homelite Dual Purpose Generator you can operate Homelite High Cycle Electric Chain Saws . . . the lightweight one man chain saws that cut cutting costs down to a new amazing low.

The high cycle tools . . . impact wrenches, drills, grinders, etc . . . that you can operate with a Homelite Dual Purpose Generator are lighter-weight, faster-working, easier to handle and far more trouble-free.

CARRYABLE

PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE

CORPORATION

1003 RIVERDALE AVENUE • PORT CHESTER, N.Y.

(Continued from page 167)

Memphis, Tenn.; James M. Hanks, Dallas, Tex.; A. W. Hunt, Chicago, Ill.; Alfred S. Christiansen, Omaha, Neb.; Al Manerbine, Denver, Colo.; Hans Helmle, Los Angeles, Calif.; J. D. Kelley, Charlotte, N. C.

Cummins Business Machines Corp.: Will now be known as the Cummins-Chicago Corp.

New Plants or Offices

American Chain & Cable Co., Inc.: Atlanta, Ga., offices are now located at 1401 Howell Mill Road, N. W.

Baldwin-Lima-Hamilton: Has closed its offices at 120 Broadway, New York City, and will coordinate all sales activities in the New York area at its offices at 60 E. 42nd St.

Connors Steel Co.: This division of H. K. Porter Co. has let a contract for a $2,000,000 plant expansion to the Rust Engineering Co.

Frank G. Hough Co.: Played host recently to more than 200 guests on completion of a building program that doubled production capacity last year.

Zonolite Co.: Vermiculite processing plants have been opened in Trenton, N. J., Birmingham, Ala., and Tampa, Fla.

Union Wire Rope Corp.: Is spending $2,000,000 to expand its Kansas City plant.

Wickwire Spencer Steel: Executive offices of this division of the Colorado Fuel & Iron Corp. are located at 575 Madison Ave., New York 22, N. Y.

Davis Plywood Corp.: Toledo offices are located at 1502 Elm St. Telephone and teletype numbers remain the same.

Hercules Powder Co.: San Francisco offices are moved to Standard Oil Bldg., 225 Bush St.

Black & Decker Mfg. Co.: Has broken ground for a new 100,000 sq ft branch plant at Hampstead, Md.

Consolidated Machinery & Supply Co., Ltd.: Has expanded manufacturing facilities at its Los Angeles plant by adding 18,000 sq ft of floor space.

Harnischfeger Corp.: Construction has begun on a new factory and office building in Crystal Lake, Ill., to house the Diesel Division.

Joseph T. Ryerson & Son, Inc.: Has begun an expansion program to add 50,000 sq ft to its St. Louis, Mo., plant.

Speco, Inc.: Eastern district sales office is opened at 30 Church St., New York, N. Y. David M. Waterhouse is district manager.

MICHIGAN TRUCK EXCAVATOR... *rated "TOPS"*

by City of Birmingham, Michigan

"Thirteen years is a lot for a machine, and we beat it badly. It was a good old machine." That's what Marx Fall, Superintendent Department of Public Works, said about the MICHIGAN ⅜ yd. truck hoe owned by the city for thirteen years.

The City of Birmingham now operates a new MICHIGAN S-4 ½ yd. truck hoe which works 48 hours a week trenching for water and sewer connections, much of the time in blue clay. Operator Tom Griffin said: "It operates easily and against other ½ yd. machines our MICHIGAN ditches faster. It's easier to drive, too."

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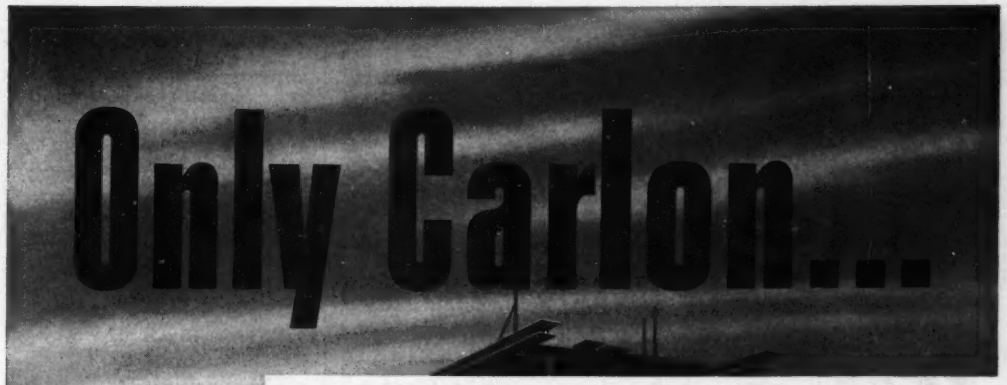

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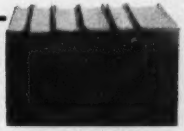

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BAY CITY, MICHIGAN

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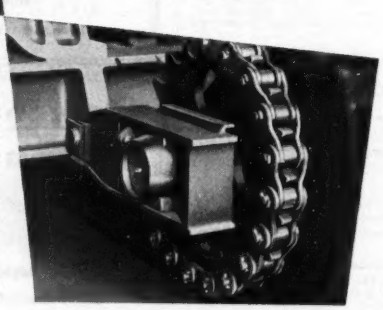

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BAY CITY

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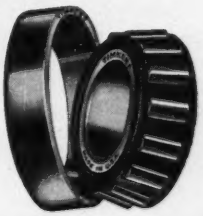

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